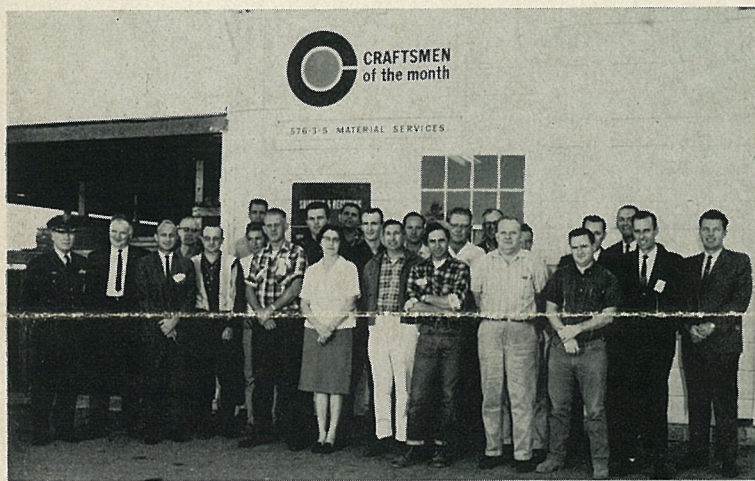




NEW LOOK—Smocks and caps of environmentally controlled production electronics area give uniform appearance to all present as President J. R. Dempsey, standing left, presents November Craftsmanship award for San Diego to W. U. Gatterman for Dept. 780-1 employees.



VAFB CRAFTSMEN—These shipping and receiving employees at VAFB won Craftsmanship honors for second consecutive month. Participating in ceremonies for presentation of November award were Manager E. A. Millar; D. L. Fagan, operations director; W. J. Davis, Quality Assurance Office, WCMR; G. L. Dahle, traffic assistant supervisor; Col. O. A. Heinlein, commander, Air Force Logistics Command Support Group.

Operations Dept. Doubles '64 Goal In Savings Through Value Control

From anybody's point of view, \$4,268,500 is a lot of money.

For GD/Astronautics' operations department, it's a figure which evokes a great deal of pride.

The \$4 million-plus represents the grand total of audited savings achieved through operations value control projects (exclusive of material operations) during 1964. To make the pride a little keener, it represents nearly double the savings goal the department set for itself at the beginning of the year.

The concentrated effort which achieved these savings, and the organization through which they were effected is typical of the division-wide program at GD/Astronautics. Formal organizations are now established within all departments, and receiving overall coordination through the office of E. D. Heller, manager of cost reduction and value control.

Operations department efforts are spearheaded by G. M. Loudermilk, value control coordinator, reporting to Production Engineering Manager G. A. Grossaint. Loudermilk is assisted by G. W. Webber, value control specialist, and brings into focus the effort of a six-man corps of VC representatives in six major operations units.

Working, in turn, with the VC

reps are a total of 43 department representatives who provide total coverage in all areas.

Loudermilk and Webber devote full time to the VC effort, while the others—all graduates of GD/Astro's value engineering seminars—bring trained value consciousness to their regular work assignments.

(Continued on Page 2)



VALUE HUNTERS—Key figures in operations department value control effort which netted over \$4 million savings in 1964, are pictured with G. A. Grossaint, GD/Astro manager of production engineering, right. Shown are C. E. Roye, left, H. J. McDuffee, V. C. Jackson standing in for W. U. Gatterman, A. R. Mosco, all VC reps; G. M. Loudermilk, VC coordinator; T. F. McAleer, rep; and Grossaint.

'Do Good Work' Program Nears First Birthday

A repeat winner at Vandenberg AFB, and new units winning in San Diego and at Cape Kennedy highlighted GD/Astronautics' Craftsmanship awards for November.

At VAFB, Operations Director Don L. Fagan presented the award for the second consecutive month to material control (Dept. 576-3-5), with E. A. Millar accepting on behalf of department employees.

W. U. Gatterman accepted San Diego honors for production electronics (Dept. 780-1) from President J. R. Dempsey, in a unique ceremony which found all present dressed in the lint-free garb of the environmentally-controlled electronics area.

Centaur stepped into the limelight at Cape Kennedy, with presentation of the November Craftsmanship award to personnel of Complex 36-A.

As the Do Good Work program neared its first "birthday" (November honors were the 11th presented in the Craftsmanship competition), a total of nine departments had gained possession of the prized "Craftsmen of the Month" banner at least once.

Lee Ely's Dept. 382 group was a double winner, scoring both in April and October; and so was the Dept. 972 organization headed by Steve Barinka which won in both June and September.

San Diego winners for 1964 were: Dept. 454, January; Dept. 718, February; Dept. 731, March; Dept. 382, April; Dept. 733, May; Dept. 972, June; Dept. 714, July; Dept. 758, August; Dept. 972, September; Dept. 382, October; Dept. 780-1, November.

The VAFB battle, too, has been hard-fought. The award was instituted there in April, and for three months—April, May and June—MAB-5 seemed to hold a "corner" on the plaque. MAB-5 also set something of a record by achieving an August Quality Index of 130.0—a perfect score.

Vandenberg's 4300-A area won in July; PALC-I in August and again in September; and October-November honors went to the material control unit (3300 area).

When the "battle was joined" at Cape Kennedy in October, Complex 13 captured the first award before yielding to Complex 36-A for November.

A unique factor in Craftsmanship scoring prevents any winner from "resting on its laurels."



OPERATION UNDERBRUSH—John and Marty, sons of GD/Astro Photographer Bob Weissinger, are back to point out that old habits often take new forms. To start the New Year right, clean out the "underbrush" from your files; then take a new look at your filing practices to eliminate the unnecessary.

Cash Pay-off Extended On Paper Saving Ideas

A way for GD/Astronautics employees to support Operation Underbrush—the division-wide effort to eliminate unnecessary paperwork—and collect a cash award at the same time, has been announced by the suggestion review and evaluation section of division systems.

During January, all non-supervisory salaried employees will be eligible for cash awards on approved Cost Improvement Proposals (CIPs) relating to Operation Underbrush. (Previously, only hourly employees received cash awards.)

Here's how it works:

As in the past, hourly personnel will submit ideas on Employee

Suggestion (ES) forms, while salaried personnel use CIP forms. Ample supplies of both are available at suggestion boxes throughout GD/Astro facilities.

In completing these forms, both hourly and salaried employees should identify ideas pertaining to paperwork reduction by marking the "Subject" block of the form with "UNDERBRUSH: . . ." and then listing the subject of the suggestion.

Labeling the forms in this way will (1) insure priority handling of the suggestion, and (2) make both hourly AND SALARIED (non-supervisory) employees eligible for cash awards of 10 per cent of the first year net savings on their paper-elimination ideas.

Other cost-reducing ES/CIPs not related to Operation Underbrush, will, of course, be welcomed, but will be subject to the previously existing rules. Members of supervision are especially urged to submit paperwork-oriented suggestions as well as other money saving ideas as Cost Reduction Proposals.

J. H. Johnson, director of management systems, explained, "By adapting the ES program to provide priority handling of suggestions which reduce paperwork, and extending cash awards to salaried employees for approved suggestions of this kind, significant contributions to Operation Underbrush can be expected."

'Clean Out the Files' Week Is Proclaimed

This week (Jan. 4-8) is "clean out the files week" at GD/Astro.

Part of the division's paperwork-reducing Operation Underbrush, the five-day effort is one in which all employees can play an active part.

Since the beginning of a new year seems a particularly appropriate time to "start fresh" by weeding out the "underbrush" from files and cabinets, Operation Underbrush receptacles labeled for "trash" and "salvage" have been spotted conveniently throughout GD/Astro facilities.

AvWeek 'Honor' List Includes Five GD Men

Aviation Week and Space Technology magazine in its Dec. 28, 1964 issue singled out 28 individuals for "Laurels For 1964" and of the ten chosen from industry, five were General Dynamics Corporation men.

The editorial, signed by Robert Hotz, AvWeek editor, started out: "... here are the people and organizations that we think made significant contributions to the progress of aerospace in the country during the turbulent year of 1964."

Included were:

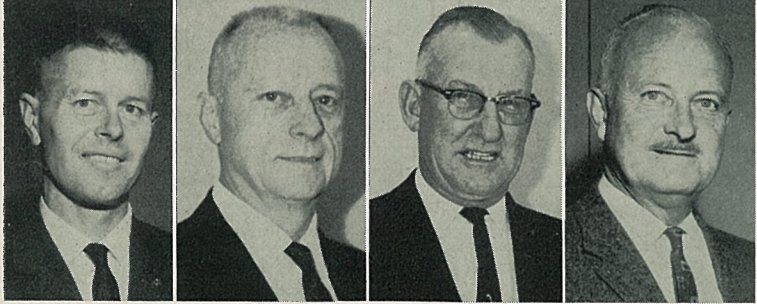
"Frank Davis, president, and J. T. 'Bing' Cosby, vice president and F-111 program director, both of General Dynamics/Fort Worth, for bringing the F-111 prototype through to successful first flight in just 25 months and well ahead of the official development schedule."

"William W. Fox, Convair director of engineering, and James Fink, COIN program manager, for their successful execution of the Charger COIN aircraft program that went from initial design concept to successful first flight in 35 weeks."


"Charles S. Ames, vice presi-

(Continued on Page 2)

Log Book Entries



New 25-year men at Astronautics are, from left: C. E. Birch, Dept. 780-0, George C. Spencer, Dept. 130-4, Charles L. Pogorel, Dept. 406-0, J. W. Dixon, Dept. 143-1.



Also wearing 25-year emblem is W. L. Dittmann, Dept. 951-6.

Service Emblems

Service emblems due during the period Jan. 1 through Jan. 15.

Twenty-five-year: Dept. 250-1, L. G. Mulryan; Dept. 500-0, H. F. Dunholter; Dept. 527-1, W. A. Pickens; Dept. 682-1, A. L. Scheibel; Dept. 756-0, M. H. Peet; Dept. 976-3, D. L. Balch.

Twenty-year: Dept. 403-1, J. H. Slovacek; Dept. 718-0, B. M. McClure; Dept. 780-3, O. L. Huffman; Dept. 957-0, M. W. Pruitt.

Fifteen-year: Dept. 140-0, Mary S. Peters; Dept. 193-3, Leta R. Walden; Dept. 250-5, E. A. Montoya; Dept. 420-4, Julia M. Koufax; Dept. 525-1, W. I. Lane; Dept. 832-4, Pauline H. Brady.

Ten-year: Dept. 143-0, Margaret L. Corum; Dept. 143-1, G. L. Flowers; Dept. 143-3, M. M. Gordon; Dept. 250-2, P. G. Davila, W. E. Rance; Dept. 364-0, Mildred C. Groomer; Dept. 583-2, L. A. Barr; Dept. 644-0, C. F. Lehr; Dept. 715-0, R. L. Patrick; Dept. 756-0, M. R. Auger; Dept. 953-1, H. H. Busch; Dept. 960-0, R. A. Raffesberger; Dept. 964-3, R. H. Blumling.

Papers Presented

ASTRONAUTICS

LEADON—B. M., Dept. 596-0. "Method of Integral Relations Applied to the Compressible Boundary Layer with Foreign Gas Injection, Part I—Sharp-Edged or Pointed Bodies," submitted to Journal of Fluid Mechanics.

NORTON—H. N., Dept. 532-1. "Transducers," submitted to Space/Aeronautics, R&D Handbook.

WOLLNER—B. C., Dept. 512-3. "Response of Hypersonic Winged Vehicles to Abrupt Control Displacements," submitted to AIAA Journal of Aircraft.

Retirements

GUERIN—R. F. Jr., Dept. 523-6. Seniority date, March 25, 1940. Retired Sept. 25, 1964.

HERTEL—Laura J., Dept. 733-0. Seniority date, Aug. 15, 1950. Retired Nov. 30, 1964.

LEWICKI—W. A., Dept. 322-7. Seniority date, Jan. 17, 1957. Retired Oct. 1, 1964.

RUBY—Harry M., Dept. 835-1. Seniority date, Nov. 20, 1950. Retired Nov. 20, 1964.

Personals

Our sincere thanks to our many friends at GD/Astro and Convair, the AWS stress and weights groups, engineering group, and Management Club for sharing our sorrow at the loss of our husband and father, Kenneth E. Arntson, GD/Astro Dept. 376-4. Your kindness is deeply appreciated and will be remembered always.

Mrs. Kenneth Arntson
Paul, Harvey, David and Miriam.

My children and I wish to acknowledge and thank our wonderful GD/Astro friends for their many expressions of kindness and sympathy at the loss of our wife and mother, Helen D. Sexton.

Dan Sexton, Dept. 870-1.

My family and I wish to express our appreciation to employees of Depts. 732 and 733, and our other GD/Astro friends for the flowers and expressions of sympathy received on the death of my mother.

J. A. Villian, Dept. 733-0.

Deaths

ARNTSON—Kenneth E., Dept. 376-4. Died Dec. 10, 1964. Survived by wife, Ethel; four children.

General Dynamics NEWS

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Keep in Mind 'The Heat's on'

If you were personally paying a monthly heating bill in five figures and still wanted to keep your home warm and comfortable, it's doubtful that you'd set your furnace thermostat on "high"—and then throw open the doors and windows.

Well, each month during the winter, GD/Astronautics DOES pay a five-figure fuel bill—an average of \$7,000 per month for Plant 71. It also tries to keep its facilities warm, well ventilated, and to make them comfortable places in which to work.

In return employees have been asked to remember that "the heat's on!"

The winter season—and there are still a few months ahead—is a time when the division's continuing utility conservation program often goes "down hill."

In cooler weather, it naturally takes more "steam" to heat working areas. Still, this winter, although no colder than normal, heating costs have climbed some 20 per cent over last year.

To correct this situation, employees have been asked to help keep fuel bills in line by following these suggestions from GD/Astro's plant engineering (Dept. 250):

(1) Be utility conscious. If you have access to a thermostat controlling temperatures in your area, be reasonable about the setting.

(2) Keep doors and windows closed. Opening them not only wastes heat; it can defeat the efforts of an entire, scientifically designed heating and ventilating system by making it "work overtime" or beyond its capacity.

(3) If you really feel your work area is uncomfortable, ask your supervisor to contact "maintenance dispatch," ext. 1130. Plant engineering wants all GD/Astro's heating and ventilating systems to function properly. If something is wrong in your area, they'd like to know about it.

Finally, remember: The heat's on!

He'll sign anything!



OPERATION UNDERBRUSH—The Underbrush Tiger has a word of caution for the originator of paperwork. Before it's signed, sealed and delivered, material should be carefully reviewed for content to be sure it is readily understandable, complete, accurate, and—of course—that a need for the communication really exists.

Atlas-Centaur Succeeds In Severest Test Yet

A flaming re-entry east of Australia Dec. 12 climaxed the successful flight of Atlas-Centaur Four (AC-4) following 15 hours in earth orbit at an altitude of 100 miles.

AC-4 was launched Dec. 11 from Complex 36-A, Cape Kennedy.

The successful flight represented the most severe test to date in Centaur's research and development program, since each Atlas-Centaur flight is more complex than preceding tests.

Primary test mission was to launch AC-4 on a trajectory approximating that of operational missions and to inject Centaur into a circular orbit about 100 miles above the earth. Previous flights were made along a trajectory to attain orbits of about 300 statute miles, affording better tracking via ground stations. The lower trajectory meant the vehicle would remain in the earth's atmosphere for longer periods, subjecting it to higher aerodynamic loading and heating than ever before.

Additionally, Centaur for the first time carried aloft a 2,100-pound simulated payload. This was a model representing the weight and mass of a surveyor spacecraft.

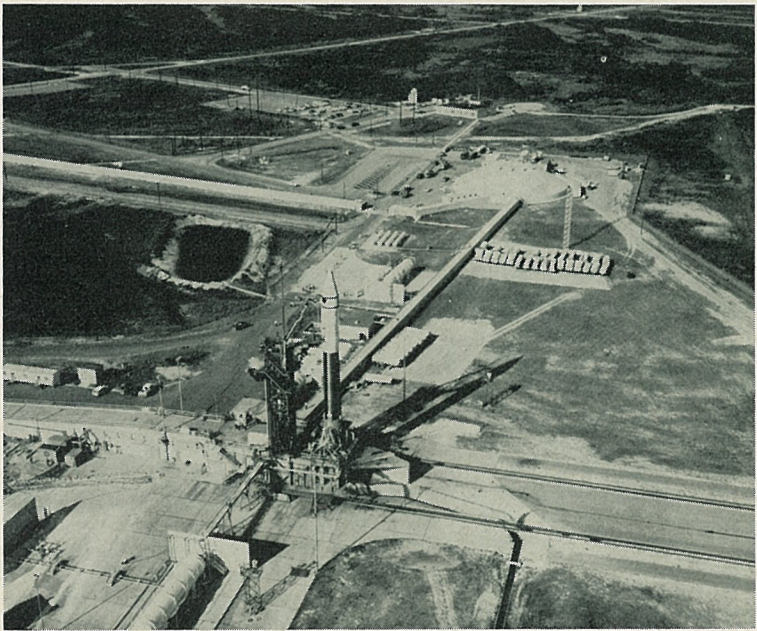
And Centaur's all-inertial guidance system operated for the first time in a "closed loop" command capacity, directing Atlas-Centaur and controlling flight events aboard both vehicles. Previous flights were "open loop."

Not carried out were a series of "bonus experiments" to be attempted only after primary phases of the program were complete.

Typical was the restarting of Centaur's engines following a "coast" in orbit. A single "burn" did occur, placing Centaur into orbit. And a single "burn" will be sufficient for programmed Surveyor lunar exploration. Development of restart capabilities will enhance Centaur's role in possible future missions.

The flight of AC-4 was the fourth of 15 Atlas-Centaur flights planned under current contracts. Of the flights remaining, seven will be operational Surveyor missions to the moon.

A GD/Astro launch crew under Daniel Sarokon carried out the AC-4 operation.



READY TO ROAR — Atlas-Centaur Four (AC-4) stands ready on Complex 36-A launch pad, Cape Kennedy, during final preparations for recent flight. Launch and orbit was carried out successfully with combination being put through its most severe series of tests to date. Following 15 hours of orbiting, Centaur and simulated Surveyor spacecraft it carried plunged back into earth's atmosphere near Australia.

Operations Dept. Doubles '64 Goal In Savings Through Value Control

(Continued from Page 1)

W. U. Gatterman, for example, is VC rep for electronics manufacturing (Dept. 780) which during 1964 racked up savings of \$2,217,000. In production engineering (Dept. 400) with savings of \$1,736,000 is VC rep C. E. Royce.

Material operations (Dept. 835) has T. F. McAleer (\$11,000 savings); operations control (Dept. 210) which saved \$65,000, A. R. Mosco; H. J. McDuffee is rep in Dept. 700 (fabrication and assembly) which tallied \$140,500; and D. E. Merriam is plant engineering VC rep.

Operations' former customer service unit made a major contribution to the 1964 total with savings of \$164,000.

Throughout GD/Astro, the effort to trim costs still further while maintaining the division's traditionally high standards of product quality will continue during 1965. Operations, for example, has approximately doubled its this-year's savings target over the 1964 goal.

RENNELS ASSUMES AF CONTRACT POST

Col. Fred L. Rennels Jr. has assumed command of the Air Force Western Contract Management Region, replacing Col. R. W. LaPlante who remains with WCMR as vice commander.

Col. Rennels heads an organization which manages assigned contracts issued by the Air Force and other governmental agencies within a 13-state western region. It also has responsibility for major ballistic and space programs, including Atlas and other missiles.

Reporting to Col. Rennels is the entire GD/Astronautics Air Force Plant Representative organization headed by Col. Malcolm K. Andresen.

A native of Texas, Col. Rennels entered the Air Force in 1942. During World War II he flew missions in P-38 and B-17 type aircraft. Since that period he has held a number of posts in the United States and Germany.

Last duty assignment for Col. Rennels was that of AFPR at North American in Los Angeles.

Ultrasonic Amplifier Spots Leaks 'Impossible to Detect'

A handy, ultrasonic amplifier called Sono-Probe is helping GD/Fort Worth technicians detect sounds not normally heard by the human ear.

The device—consisting of ear phones and a 12-inch-long transistorized unit—was developed by Eldon W. Bielss, manufacturing research engineer.

It can pick up sounds in the high audio-frequency range, up to 40,000 cycles a second. This includes sounds like the ultrasonic whistle heard by dogs, but not humans, and the ultra-high-frequency "radar" sound made by bats in flight.

Several uses are being found in-plant for Sono-Probe.

In Dept. 35 (plastic), the device is being used to detect air leaks in manufacturing certain high-tolerance fiber glass missile and airplane parts.

These parts must be made ab-

solutely air-tight before baking. Using the device, technicians can probe the cellophane-like covering for air leaks up to .003 inches at about 5 pounds a square inch of pressure.

"These leaks would be virtually impossible to detect using conventional equipment," Bielss says.

The Sono-Probe is also proving to be a good detective during destructive-metal testing.

"Hooked into a recorder, Sono-Probe enables engineers to both see and hear the slightest impending break in metals," Bielss says.

Other uses—such as a tester for leaks in regular gas and air lines—are envisioned for Sono-Probe.

The unit, similar in many respects to a small transistorized radio, operates off a nine-volt transistor battery.



LECTURER — At right above is E. H. Heinemann, General Dynamics vice president-engineering and program development, who recently delivered Wilbur Wright Memorial lecture for Royal Aeronautical Society in London. Visual aids accompanied talk, such as illustration of F-111, at left.

Heinemann Foresees 'Orbital Plane' As Possibility Before Century Ends

"The Air Age is just reaching its maturity.

"The progress of the past has been nothing less than amazing, but the progress of the future will be even greater."

So said E. H. Heinemann, General Dynamics vice president-engineering and program development, speaking before the Royal Aeronautical Society in London last month.

Heinemann, for many years a national figure in American aviation, was selected to deliver the Society's 53rd Wilbur Wright Memorial lecture.

"During recent years the airplane has been obscured by the great emphasis given missiles and space programs," Heinemann continued.

"Now that escape velocities are commonplace and manned space travel has been demonstrated successfully, one must conclude that missiles and space vehicles will not replace aviation as was so commonly predicted a few years ago. Each will have its own need and place. . . .

"It is now clear that actual passenger space travel (to other planets) . . . will be of little significance during this century . . . (and) it seems reasonable that during the foreseeable future man's flight will be confined mainly to this planet, traveling largely by aircraft within the earth's atmosphere. However, during the latter part of this century the airplane as we know it today may evolve into a ballistic or orbital device operating in or above the upper atmosphere. . . ."

Heinemann predicted that meanwhile advancement will occur in aircraft for a wide range of uses. He forecast a fertile design field in the vertical and short take-off and landing category, helicopters, tilt-wing and lifting-engine craft as well as a wide variety of hybrid machines.

"It appears clear to me that a great need will continue to exist for machines able to travel relatively short distances—usually less than 500 miles—at speeds between 200 and 400 miles per hour. . . .

"I have often said that had we had jets first, we never would have invented the propeller. But I must admit the propeller has its place and, in my opinion, it will be with us for a very long time."

Heinemann forecast no immediate obsolescence for subsonic jets and stated "all indications are that this category will continue in the foreseeable future even though there will be many evolutionary developments in both aircraft and engines. It will tend to dominate air transportation and do the bulk of every day

civilian and military jobs in the years ahead."

As for supersonic jets, Heinemann pointed out that several aircraft have exceeded Mach 3 and the X-15 has reached Mach 5.5 for a short time and the "characteristics and problems of supersonic flight are becoming quite well known."

"The problem now appears to be one of matching finances with technology," he added.

Although agreeing that Mach 3 is a good design point for supersonic transports and next generation military machines, offering the most efficient and practicable speed, Heinemann commented, "I will be surprised if its realization in continuous flight, especially by airlines, does not occur considerably later than advertised."

He explained his position was not intended as negative or pessimistic, but rather an effort at being realistic in view of the development problems.

"In the not too distant future we will see military aircraft operating for short periods at speeds beyond Mach 3, but for continuous operations such as with commercial transports, the problem is much more difficult. The need to fly that fast within the lower atmosphere, in my

opinion, is not apparent."

Heinemann briefed the audience of about 150 aviation leaders on current airplanes at Canadair, Fort Worth division, Convair and also touched on Astronautics Atlas.

"These design configurations were reviewed to illustrate that although we have built supersonic aircraft, we still see the need for VTOL and subsonic machines. We also see the need for short haul transports and long range subsonic transports."

"I believe very strongly that requirements for a full spectrum of these categories will continue for the foreseeable future, and that improvements in each will continue on a sound basis, thus insuring both the airlines and the military services of a supply of modern, safe, economical, high-performance machines to meet all their requirements. This, in turn, will permit the aircraft industry to continue to develop through the remainder of the century. . . ."

Returning to an earlier reference to the possibility eventually of an "orbital device," Heinemann said:

"I am inclined to believe that scientific advancement will be so great in the period just ahead that we can take a bold step and start thinking about an airplane using sub-orbiting or momentum principles, thus resulting in a new freedom—'freedom from the atmosphere.' This would be a step as great as that taken by the Wrights when they gained 'freedom from the earth' and it would make it possible to travel to any spot on the surface of the earth . . . in less than an hour. . . ."

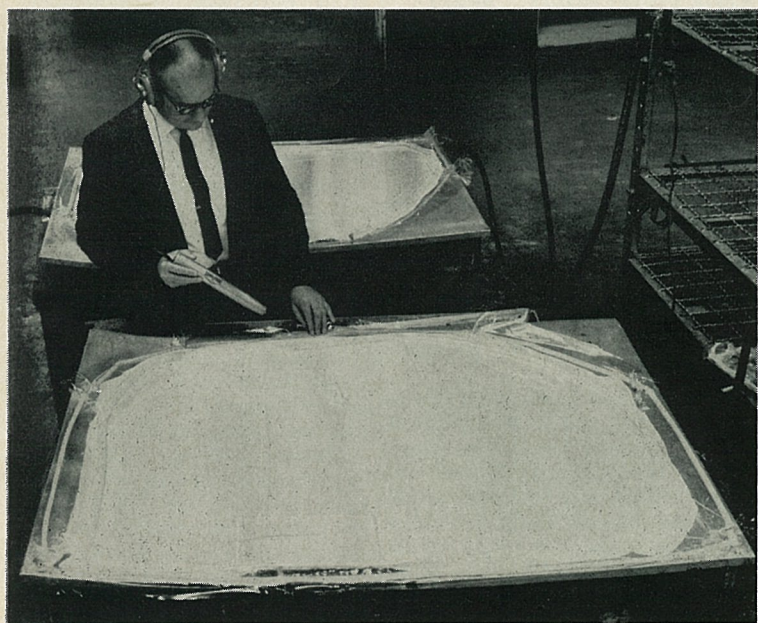
"At present the problems of aerodynamic heating during the climb-out and return through the atmosphere, the high initial thrust requirements and the speed-braking problems appear very difficult. However, I doubt if they will be any more difficult with respect to our technology than were the problems confronting the Wright Brothers at the turn of the century. . . ."

ROGER LEWIS NAMED TO AVIATION BOARD

Roger Lewis, president of General Dynamics Corporation, has been appointed to the Board of Nominations of the Aviation Hall of Fame, Inc. Each year the board selects individuals to honor for pioneering aviation contributions.

F-111 PERT CHIEF SPEAKS IN DALLAS

Loren Howerton, chief of F-111 PERT cost and financial control, at GD/FW spoke to Dallas Chapter of Budget Executives Institute recently in Dallas.



LISTENING — Eldon W. Bielss, manufacturing research engineer, listens for air leaks in high audio-frequency range with Sono-Probe, and ultra-sonic amplifier he designed.

People Mobility

Interdivisional Transfers

(Following are recent personnel transfers among General Dynamics divisions. In parentheses are dates when individuals joined the company.)

JOHN T. LANE (1962) from Astro contracts to Corporate Headquarters reporting to James N. Sowers, director of cost analysis. DONALD E. KOLESAR (1958) from Astro to GD/Electronics-Rochester production control. PAUL L. DUDNEY (1948) from Astro to Convair support operations. STEVE P. PELLISH (1959) and DEAN A. HENDERSON (1959) from Astro to Convair design engineering.

GEORGE T. FREEMAN (1952), HARRY NISBET (1951), and EDWARD E. SANDERSON (1963) from Astro to GD/E-Rochester production engineering. ROBERT C. REED (1956) from Astro to Convair manufacturing research and development. ALBERT J. COMBS (1940), T. O. JINKS (1961), JOHN D. CHAMBERS (1957), PAUL A. WING (1958) from Astro to GD/E-Rochester production control. ERNEST C. GLISAN (1963) from Astro to Convair cost accounting.

FRANK E. ROEDER JR. (1951) from Astro industrial relations to Convair training. RICHARD J. ILLIG (1961) from Astro to GD/E-Rochester engineering services. ROBERT R. TOMPKINS (1940) from Astro to Fort Worth procurement planning. BURTON W. BOSTAD (1951), JAMES E. NORTHROP (1951), ELDON G. SAYLOR (1957), DAROLD K. SMITH (1956) from Astro to Convair engineering. FRANK L. PACKARD (1963) from Astro to GD/E-Rochester purchasing.



"And another thing . . . when you get to work stay out of drafts."



FAREWELL—Herb Rubottom (right), head of Convair educational services, receives plaque in appreciation for years of service to GD/Convair Joint Apprenticeship Committee from L. W. Turner upon recent retirement. Rubottom was chairman of committee 20 years.

GD Drivers Warned of Rules Requiring Auto Smog Devices

A limited number of California State Highway Department pamphlets explaining current motor vehicle pollution control requirements are now available through GD/Astronautics employee services outlets.

Transportation section of plant engineering department acquired them as a service to employees. They are free.

Recent California Vehicle Code changes require that cars and trucks be equipped with approved devices to control emission of pollutants from engine crankcases. They are commonly called "smog control" devices.

'Backbone to Quality' Subject For Speech

"Planning—The Backbone to Quality," will be the topic of Wendell J. Jones, Solar's chief of quality assurance, at the Jan. 11 meeting of the San Diego Section of the American Society for Quality Control.

Meeting will be in the Bronze Room and Restaurant, La Mesa. Social hour is at 6 p.m.; dinner at 6:30; and meeting at 8.

Jones' subject deals with the challenge to quality assurance on the many differing customer requirements.

Dinner reservations, at \$2.50 each, may be made through L. C. Stuckey, Convair Plant 1, ext. 646; Paul Gelles, Astro Plant 71, ext. 4504; Robert Frederick, Astro Plant 19, ext. 509; J. A. Lederer, GD/Electronics Plant 1, ext. 1476; Ivan Kemper, Stromberg-Carlson, Plant 2, ext. 36.

Gardeners to Vote On 1965 Officers

Astro and Convair gardeners will choose their slate of officers for the new club year for the joint ARA-CRA Garden Club at tonight's (Jan. 6) meeting, 7:30 p.m., in the Floral Association Bldg., Balboa Park.

A local rose expert will brief members on do's and don'ts of care of roses. A demonstration will be given on selection of rose bushes from nurseries, correct pruning, spraying and fertilizing.

ARA Commissioner Everett Henderson and CRA Commissioner Gene Zimmerman urge all interested in rose culture to attend.

BOAT HANDLING CLASS SET AT ARA CLUBHOUSE

A U. S. Power Squadron class in small boat handling, arranged by Helix Power Squadron, will be presented free of charge in ARA Clubhouse, with first of 12 weekly sessions slated from 5 to 7 p.m., Jan. 20. Course material is applicable to outboards, sailboats and power cruisers. Lee Schenke, Dept. 661-4, is class chairman, and can provide details to those calling him at Plant 71, ext. 2466.

Astro's Art Section Earns Merit Award

GD/Astronautics art section of communication (Dept. 126) under Manager S. B. Hodge has been honored with an Award of Distinctive Merit for work chosen for inclusion in the annual Exhibition of Advertising and Editorial Art in the West, sponsored by Art Directors Club of Los Angeles.

Cited was the unique deck of "space cards" developed by the section for use in a management display and presentation.

Credits listed Burt Brockett, art director; Don Wright, designer; art by Masami Daijogo, John Isley, John Sentovic, Wright, Phil Kirkland, Bill Noonan; and GD/Convair's Jack Davis.

Some 6,000 entries from 32 western states were submitted for judging; 500 items were then selected for exhibition; and awards went to items singled out within this number.

The collection will be exhibited daily Jan. 25 through Feb. 28 at California Museum of Science and Industry, Los Angeles.

Patent Counsel Post Goes to Earl Kotts

Earl F. Kotts will assume duties as GD/Astronautics patent counsel on Jan. 11, reporting to Chief Counsel H. Cushman Dow.



Earl Kotts

Kotts, assistant patent counsel since 1963, is to succeed Carl R. Brown who will enter private law practice. A native of Michigan, with studies in mechanical engineering at Wayne University and Henry Ford Community College (Dearborn, Mich.), Kotts holds a law degree from Detroit College of Law. He is a former Naval aviator.

Prior to joining GD/Astro, Kotts was patent administrator for Ryan Aeronautical Co., handling all patent matters for that firm since 1961.

The Astro patent office will continue to handle GD/Convair patent matters.

Junior Rifleshooters Earn Turkeys at Gillespie

Two Astro Junior Rifleshooters "shot down" turkeys at their annual Christmas luck shoot Dec. 19 at Gillespie Field Range.

Gary DeGraff of the green squad won a bird and trophy for first place in the turkey event. Rod Lemley of the blue squad, who placed second, also garnered the same prizes. Mark Huffman of the green squad took home a trophy for third-place score.

Following the special turkey shoot and usual NRA 50-ft. qualification firing all the 36 Astro and Convair youngsters, their parents and Rifleshooters' staff members joined in a Christmas party at the clubhouse.

Young Rifleshooters consumed all the hot dogs, beans, pickles, soft drinks, ice cream and cookies they could hold, then exercised it off in a twist dance contest.

'Fatigue' Handbook Available Locally

"Tips on Fatigue," the handbook prepared by Convair's Clarence R. Smith for the Bureau of Naval Weapons, is now available to San Diego people at a local book store.

The manual has been stocked by the San Diego Technical Book Co., 816 Broadway.

It is especially valuable to draftsmen, shop foremen, inspectors, as well as design engineers, concerned in structural fatigue problems. The manual is also available to the public through the U. S. Government Printing Office, Washington, D. C.

Astro Organizational Changes Parallel AWS-SLV Consolidation

GD/Astronautics President J. R. Dempsey has announced a series of organizational changes paralleling recent moves which combined Atlas Weapon System (AWS) and Space Launch Vehicles (SLV) under C. S. Ames, vice president and program director.

Project reliability control activities are now the responsibility of W. J. Maloney who will also coordinate reliability control responsibilities on such activities as SATAR, life support systems and the Apollo instrumentation ships program.

In addition, SLV and AWS final acceptance have been combined and are the responsibility

of D. R. Archibald. Both Maloney and Archibald continue to report to P. I. Harr, director of reliability control.

Two Western Test Range launch operations departments, SLV under C. A. Johnston and AWS under A. H. Hoines, now report directly to D. L. Fagan, director of operations—WTR.

Two San Diego manufacturing operations departments, Dept. 670 (SLV) under L. L. Tuttle and Dept. 381 (AWS) under F. E. Grossher, now report to R. G. Daly of the operations department (Dept. 200).

Dempsey also assigned W. F. Miller responsibilities for coordinating Astronautics activities in working with the Air Force and other governmental agencies in developing effective uses for retiring Atlas missiles and launch site equipment. Miller reports to W. H. Patterson, vice president—systems development.

Astro Families' Decorations Win

Two GD/Astronautics families won prizes with their artistic talents in Rancho Bernardo's community-wide Christmas home decorating contest.

Mr. and Mrs. Anthony Calman Jr. won first prize, a transistor television set, for their display depicting the adoration of the Magi. All decorations, including golden sculptured figures of the three kings, Christ child and Madonna, were made by the Calmans.

Fourth prize, a transistor radio, went to Mr. and Mrs. Edwin Riemer. Riemer, an Astro engineer as is Calman, fashioned two giant candy canes from paper cylinders that formerly contained hydraulic parts. The canes bore a banner reading "Happy Holidays," and pine trees in the Riemer yard were decorated with red satin bows and ornaments.

Another Astro man, Stan Hodge, manager of art direction, was one of the judges.

Astro Author's Book In Second Printing

A new, enlarged edition of a technical "best seller" authored by GD/Astro's W. E. Woodson, Dept. 262-2, was published recently by University of California Press.

Woodson's "Human Engineering Guide for Equipment Designers" first appeared in 1954, followed by Japanese and French translations. The 1964 edition is roughly double in size, and like its predecessor is intended to guide engineers, industrial designers, architects, etc., in suiting designs to human capabilities and limitations.

Is Address Correct On Your Check Stub?

GD/Astronautics is in the process of mailing "W-2" forms to all who were on company payrolls during 1964.

These forms are necessary in filing federal income tax statements for 1964.

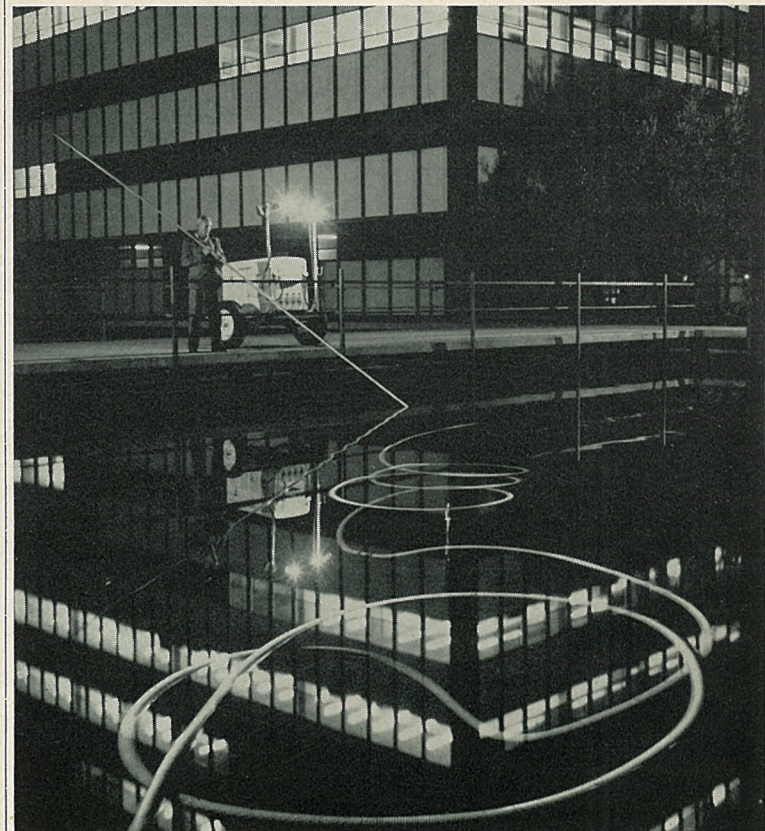
Employees who have not received their "W-2" forms by the end of January may contact general accounting at Plant 71.

Chances are, the delay in delivery will be due to an incorrect home address. All "W-2" forms are going to the employees at the address shown on his paycheck (stub). Employees are urged to check their stubs for correct addresses. Incorrect addresses noted on stubs should be reported immediately to general accounting.

AF Industry Program Topic For Conference

Information exchange on administration of the Air Force Education with Industry program will take place during an informal session Jan. 15 which brings together participants at GD/Astronautics and Douglas Aircraft Corp.

Hosts will be Emory Thurston, Dept. 130-3, who coordinates the program at GD/Astro, with Capt. R. L. Bulmer and D. F. Chilbert, now assigned to AFEWI here. Douglas will be represented by Maurice Kauffman, AFEWI coordinator, and five Air Force officers.



SEEING DOUBLE—Astro's M. W. Crumm appears twice above as he cleans division's outdoor reflection pool. Cleaning requires about three eight-hour shifts, is done each month. Tested and sampled daily, pool holds 400,000 gallons of water. It provides backup water supply for emergency, can be emptied into water lines via pumps at rate of 3,000 gallons per minute.

ARA Leagues Seek Bowlers

Bowlers, both men and women, are needed as replacements in regular ARA bowling leagues now rolling throughout the San Diego area, Commissioner Forest Erwin reports.

Astro leagues are currently operating at Clairemont, Parkway, La Mesa and Pacific Beach bowls. They range from low handicap to scratch leagues and include a goodly number of mixed leagues.

Individuals or couples interested may contact ARA office, ext. 1111, leaving their name, plant telephone number, approximate average and some indication of when they would like to bowl. Officials will contact interested parties.

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Entries close Jan. 15 for the big GD/Astro Management Club-sponsored Singles Bowling Classic set for four San Diego area locations Jan. 16-17 and 23-24.

All General Dynamics employees are eligible.

Each participant will roll five games across 10 alleys at each location for a total of 20 games. Entry fee is \$5. Top Management Club keglars will represent Astro in Zone "A" competition set March 13-14 at Clairemont, with high men in this event trekking to San Francisco in May for a state event.

Contact Forest Erwin, ext. 2884, for details.

AF Decorates Two Astro Men

Air Force Exceptional Service Awards for "heroism involving voluntary risk of life" have been presented to two GD/Astronautics men, Robert G. Daly and Paul J. Michels.

Maj. Gen. Ben I. Funk, commander of the Space Systems Division, AFSC, presented the awards Dec. 3 in ceremonies at Inglewood attended by the wives of the men and Astro President J. R. Dempsey.

Their citations accompanying the awards noted Daly and Michels "contributed greatly to saving a multimillion-dollar missile from total destruction and earned the sincere gratitude of the United States Air Force."

Both were cited for their action during an incident at Vandenberg AFB on July 10, 1961.

Daly and Michels were in the blockhouse with an Air Force launch crew from the 6595th Test Wing for launch of an Atlas-Agena vehicle. After the Atlas was committed to launch and engines fired, a ground umbilical disconnected prematurely triggering an automatic abort which shut down the engines. The abort made it impossible to unload the missile propellants and impaired the ability of the system to maintain missile fuel tank pressures, thereby creating the immediate probability of explosion and fire.

Michels and Daly volunteered to leave the safety of the blockhouse to reconnect the umbilical.

Both were on hand a few days later when the same combination was launched successfully.



WELL DESERVED—Astro's Robert G. Daly and Paul J. Michels (left and right center) recently received Air Force Exceptional Service Awards from Maj. Gen. Ben I. Funk, commander, SSD, AFSC, with Astro President J. R. Dempsey, left, in attendance. Awards recognized voluntary risk of life in preventing possible "live" Atlas-Agena vehicle explosion after aborted launch attempt at Vandenberg AFB.

Gymnastics Will Join ARA Activity Roster

Plans for a series of gymnastics classes for GD/Astro employees and members of their families have been announced by ARA Commissioner Clyde Burkhardt.

The sessions, to be conducted by a professional instructor, are envisioned as providing the novice with basic tumbling skills to start; then progressing to more complex routines.

An organizational meeting to establish schedules and make firm plans for the program will be held at 7:30 p.m., Jan. 11 in ARA Clubhouse, with all those interested urged to attend.

Two Bands to Play At Teen Club Dance

Four uninterrupted hours of dancing will be offered at the next ARA Teen Club dance, 7:30 to 11:30 p.m., Jan. 16 in ARA Clubhouse.

Two San Diego-area bands, the "Executives" and the "Dimensions," will hold forth alternately throughout the evening.

Admission is 50 cents for members, 75 cents for guests, with each member with guest allowed to invite a guest couple, and members attending "solo" permitted one guest. Good school clothes will be appropriate.

Golf League Open To Astro Women

GD/Astro women, as well as the wives or daughters of employees, have been extended a special invitation to take part in activities of the General Dynamics Women's Golf League.

This group meets the second Saturday of each month at 8:30 a.m. to tour a local golf course with prizes offered for top rounds. Next event will be Saturday (Jan. 9) at Singing Hills (the short course).

Annual dues are \$3. For information contact Iris Oster, ext. 2071, Plant 71.

Oliver E. Stewart Memorial Arranged

Employees of his GD/Astro department have presented a thoracic pump of the type used in open heart surgery to Children's Hospital as a memorial to the late Oliver E. Stewart.

Tribute to the memory of the veteran reliability control supervisor was planned by a departmental committee headed by Sam Braun, chief of outside procurement inspection, and including J. G. Sugg and Reggie Sanchez, Dept. 143-6, T. J. Marcella, Dept. 143-5, and W. A. Wade, Dept. 143-1.

CATERED DINNER OPENS ARA BRIDGE CLUB YEAR

A catered holiday dinner, Jan. 1, followed by an evening's play opened the New Year for ARA Bridge Club members, who will continue regular Friday "play nights" throughout 1965. Winners at a Dec. 11 session were Lucille Donan and Jody Miller (north-south), with Ceil McCullough and Mitzi Rustad (east-west). On Dec. 18, top players were Ed Lau and Francys Darr (N-S); Bob and Mitzi Rustad (E-W).

Story to Take Reins For Toastmasters

Astro Toastmasters Club #3745 will install new officers Jan. 8 during 7:30 p.m. ceremonies at the Bronze Room, La Mesa, with the president's gavel passing from L. S. Franklin, Dept. 141, to H. O. Story, Dept. 146.

New vice presidents for education and administration are D. R. Nash and L. Dasso, both Dept. 146, while S. W. Bobrowski, Dept. 140, is new secretary, and S. K. Brooks, Dept. 140, treasurer. They succeed E. G. Smith, J. Davis, T. W. Reese, J. A. DeShazo and N. Smith, all of reliability control departments.

E. G. Smith, Dept. 141-2, is ARA commissioner.

The club is working with local Scout Headquarters, PTAs, churches and service clubs in presenting Scout Charters to sponsoring organizations.

Toastmistresses Set Meeting For Jan. 18

Next meeting of Serra Mesa Toastmistress Club will be held at 7:30 p.m., Jan. 18 in ARA Clubhouse, with details available from Elinor Slater, ext. 2571.

This session is the group's first following installation of 1965 officers at a dinner meeting Jan. 2 at Islandia Hotel.

Elinor (Mrs. Charles) Slater, Dept. 549-1, is new president, with Irma Gilbert, wife of Lt. Col. Verne Gilbert, Air Force Audit, as vice president.

Judy (Mrs. Joseph) Copeland is secretary and Alba (Mrs. A. C.) Greeley is treasurer.

Mrs. Lonnie (Dee) Stivers of AF Audit continues as club representative.

Fred Franz Winner Of Transmitter Hunt

Fred W. Franz (WA6VHB), assisted by Lou Tavares, was winner of ARA Amateur Radio Club's "Mystery Transmitter" hunt Dec. 9, locating the broadcast site with only about 10 minutes of contest time remaining.

Second to find the transmitter, concealed by Fred Shulz (W6-VUA) in Normal Heights overlooking Mission Valley, was Don Jenkins (WA6OGH).

The club will begin a new year tonight (Jan. 6) with a meeting at 7:30 in ARA Clubhouse. This year sessions will be held the first and third Wednesdays of each month.

New Ballroom Class Will Begin on Jan. 11

Ballroom dancing students will gather at 7:30 p.m., Jan. 11 in ARA Clubhouse for the first session in a new intermediate class being conducted under ARA sponsorship.

Instruction is limited to those who have completed a formal "beginners" course, and will be held weekly (one and one-half hours each Monday) over a 12-week period. The professional instruction is provided for a total cost of \$18 per couple.

Those planning to enroll have been asked to indicate their interest in advance via AVO to ARA Commissioner L. F. Moeller, Mail Zone 191-00.

Management Club Sets 'Las Vegas' Affair

Astronautics Management Club will stage a "Las Vegas Night" meeting for husbands and wives Jan. 22 at Hotel del Coronado.

Activities begin at 6:30 p.m. and end at 12:30 a.m. with dancing, entertainment, games, door prizes, etc., slated.

Participants may join the entertainment, games and dancing for \$3.50 per person. All these activities plus a buffet will be \$6 per person. Tickets are available through all club Boosters.

Sports & Recreation

ARA Calendar

(GD/Astronautics Recreation Association (ARA) has more than 40 activities in operation for employees and members of their families. Listed here are current activities with monthly meeting schedules. Unless otherwise indicated, meetings are held at 7:30 p.m. in ARA Clubhouse. More information is available from Headquarters, ext. 1111.)

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ASTRONOMY — Meets second Fridays.

BADMINTON — Play nights each Monday, 7-10 p.m., Federal Bldg., Balboa Park.

BALLROOM DANCING—New intermediate class opens Jan. 11. Cost is \$18 per couple for 12 weeks' instruction.

BRIDGE — Play each Friday.

CERAMICS — Workshop with instruction (free, except for materials), Tuesdays and Thursdays, 10 a.m.-1 p.m.; 7-10 p.m.

CHESS — Play each Monday.

CHORAL GROUP—Meets and rehearses each Monday.

COINS — Meets third Wednesdays.

DRAMA — Business meetings, second Wednesdays.

EXPLORERS — Meets third Wednesdays. Field trips as scheduled.

FENCING — Each Friday, Downtown YWCA.

GARDEN CLUB — Meets first Wednesdays, Floral Assn. Bldg., Balboa Park.

GOLF — Monthly tournaments at area courses.

GUN CLUB — Trap and skeet. Regular Sunday shoots, CRA Range.

HI-FI/MUSIC — Meets second Tuesdays.

ICE SKATING—Discount skating for members, Thursdays, Mission Valley Ice Plaza.

INTRAMURAL SPORTS — Basketball, softball, etc., in season.

MODEL RAILROAD — Elaborate HO layout now under construction.

MOTORCYCLES — Meets first Wednesdays.

ORGAN — Discounts on instruction. Sessions held first and third Tuesdays. Call ARA Headquarters for meeting place.

PHOTOGRAPHY—Meets first and third Sundays, Photo Arts Bldg., Balboa Park.

PHYSICAL CULTURE — Operates in conjunction with ARA

Health Club. Tumbling classes to open soon.

PISTOL — Matches 9:15 a.m., second and fourth Sundays, San Diego Police Pistol Range.

RADIO — Meets first and third Wednesdays.

RIDING — Meets third Thursdays.

RIFLEERS (JR.)—Meets third Wednesdays. Saturday shoots twice a month.

ROCKHOUNDS — Meets second Wednesdays. Periodic field trips.

SAILING — Meets fourth Wednesdays. Weekend sailing.

SCIENCE (JR.) — Meets first and third Fridays.

SCULPTURE — Meets each Monday.

SKIN DIVING — Meets second Wednesdays. Regular competition.

SLOT CAR — Meets fourth Thursdays. New facility now building.

SNOW SKI — Meets first Wednesdays, October through May. Active trip schedule.

SPORTS CARS — Meets third Tuesdays.

SQUARE DANCING—Classes open spring and fall.

STAMPS — Meets second and fourth Thursdays.

TEEN CLUB — Dances first and third Saturdays.

TENNIS—Holds monthly tournaments.

TRAILERS—Meets first Tuesdays. Periodic outings.

TROPICAL FISH — Meets each Thursday.

TOASTMISTRESSES — Serra Mesa Club meets first and third Mondays.

TOASTMASTERS — Astronautics Club meets each Wednesday.

TOASTMASTERS — Dynamic Club meets each Thursday.

WATER SKI — Meets first Wednesdays, April through July. Summer skiing on Mission Bay.

WIVES CLUB—Potluck luncheons on fourth Wednesdays. Bridge every other Thursday.

POINT LOMA SITE ACQUIRES FLAGPOLE

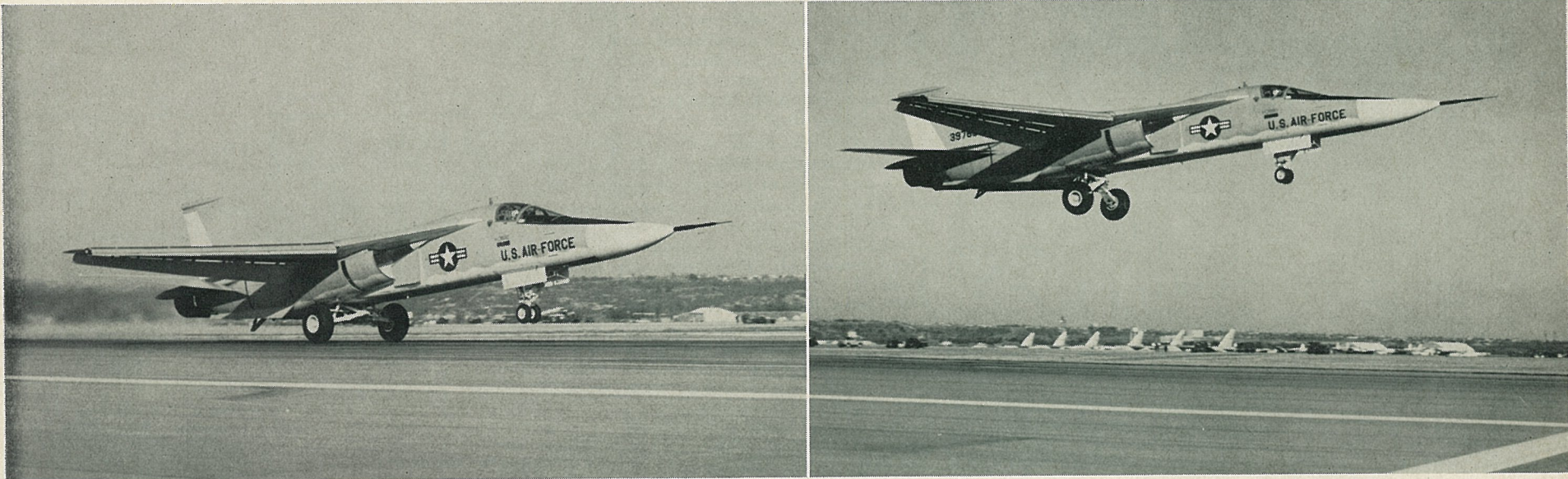
Although GD/Astro's Point Loma Test Site is among the "oldest" of Astro's test installations, it has always lacked one final bit of decor—a flagpole.

That is, until last month when plant engineering department installed one. On Dec. 11 personnel there took part in the initial flag raising.



OPERATION UNDERBRUSH—Most of the practices under attack by the Underbrush Tiger are not inherently "bad." Waste and inefficiency in the paperwork area, as in other areas, results when a usually "good" practice is abused or used to excess.

F-111 First Flight Makes National Headlines



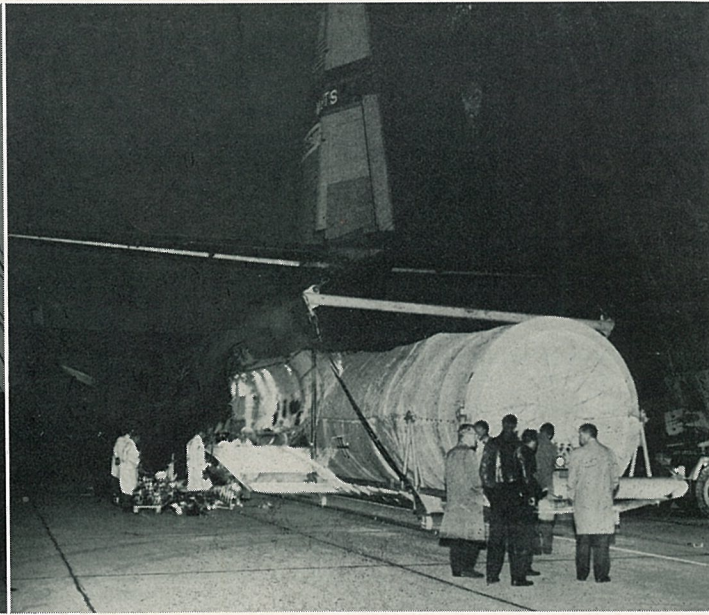
FIRST STEP — Afterburners blazing, F-111 starts first-flight roll from north end of Carswell AFB runway, Dec. 21. At 3,000-foot mark, nation's first production variable-wing fighter breaks ground and gracefully heads for sky. Successful flight lasted 21 minutes. Event was widely carried in nation's press.



HIGHLIGHTS — At top right is distinguished panel at debriefing following F-111's first flight at Fort Worth. From left: Lt. Gen. Thomas P. Gerrity, USAF deputy chief of staff for systems and logistics; Air Marshal Sir Valston E. Hancock, Royal Australian Air Force chief of air staff; Pilots Dick Johnson and Val Prahl; Eugene M. Zuckert, Secretary of the Air Force; Frank W. Davis, GD/Fort Worth president. Top left: Johnson chats with Capt. Donald C. Davis, USN, Navy F-111 deputy systems program director, and Lt. Col. S. L. Bettinger, F-111 TAC Rep, TAC Systems Office. Lower left: Johnson and Prahl meet the press.



NIGHT FLIGHT — Dusk falls over Miramar Naval Air Station as preparations are made to load GD/Astro's Centaur space vehicle aboard Air Force C-133B for flight to Cape Kennedy. Vehicle,



with dynamic model of Surveyor spacecraft on board, is slated for launch within first quarter of year. Operational flights with actual Surveyor spacecraft are set for late this year.

Mgt. Club Will Meet In 'Las Vegas' Setting At Hotel del Coronado

All the glamour of Las Vegas has been promised Management Club members and their ladies who "take a chance" on the Astro club's "Las Vegas Night" meeting, Friday (Jan. 22), by the sponsoring communication department.

The atmosphere of the fabulous city will be recreated just across the bay at Hotel del Coronado, with festivities under way from 6:30 p.m. until after midnight.

Buster Carlson's band will offer Dixieland and dance music. There will be games, dancing girls, door prizes, etc.

Tickets, available from Management Club Boosters, cost \$3.50 per person for admission, entertainment, etc. For \$6, a buffet dinner is included.

Keeping 'Underbrush' Cut Close Is Next Target

Another phase of Operation Underbrush—the division-wide effort to wipe out unnecessary paperwork—swings into action this week at GD/Astronautics.

With the New Year, a clean-out-the-files campaign cleared much of the "dead wood."

Next step, obviously, must involve keeping the "underbrush" under control.

The "dos and don'ts" of written communications are not complicated. Here are some suggestions from Operation Underbrush experts:

WHAT TO WRITE — Before you write, ask yourself if it's necessary to write at all. Would a phone call do? If you must write, do you have the facts at

hand, or will your correspondence only add confusion?

Make a clear, unadorned statement of action required, or the information you wish to convey. Write to "express," not just "impress." Stick to the point. Identify the basic information, write it, and leave out the superfluous.

Make every copy count. Is there a real need for extra copies and extra distribution?

HOW TO WRITE — Make it simple and straightforward. Use plain English. Skip jargon and obscure abbreviations.

Short sentences help. According to the American Press Institute, sentences containing 19 or 20 words are understood by 90 per cent of their readers. Long sentences are hard to understand. Seven out of ten readers just don't "get the picture" after wading through a 33-word sentence.

Utilities Shutdown Scheduled Sunday

A complete shutdown of all powered utilities—electrical, compressed air, water service, heating and ventilating and air conditioning will occur between 7 a.m. and 3:30 p.m. Sunday (Jan. 24) at GD/Astro's Plant 71.

On Jan. 31 during the same time span lighting and electrical power will be shut off in Bldgs. 5, 11, 18, 23, 24, 25 and 50, the hydrogen test area and the microwave antenna range.

'ASTRO ONLY' NIGHT SET AT DISNEYLAND BY MANAGEMENT CLUB

Arrangements for exclusive use of Disneyland and its many attractions by GD/Astronautics employees and their families for an evening have been made by the Astronautics Management Club.

The date is Saturday, March 27 from 8 p.m. to 1 a.m.

However, available tickets will be distributed to Management Club Boosters on or before Feb. 8 and will be sold first-come, first-served.

ALL employees and their families are invited to take part.

Tickets will sell for \$3.75 per person. They are good for admission and unlimited use of Disneyland attractions, including dancing and the Tiki Room but excluding the shooting gallery. There are no other charges and guests may enjoy as many attractions as they like for the single price.

The general public will be cleared from Disneyland between 6 and 8 p.m. and only holders of GD/Astro tickets will be allowed to remain, according to Bob Emerson, Management Club tour chairman.

As a further service the club is considering round-trip bus service for about \$2.35 per person. Arrangements are in progress to procure special rates at one of the nearby motels for those who wish to remain overnight.

34 Tons of Excess Paperwork Dropped

Operation Underbrush has received an enthusiastic response from GD/Astro employees, according to information now being assembled.

During "clean-out-the-files" week (Jan. 4-8), employees deposited 675,000 lbs. of unneeded paperwork (nearly 34 tons!) in specially-designated receptacles throughout Plant 71, while a heavy volume of salvageable material found its way to other labeled containers.

Participation in the Employee Suggestion (ES) and Cost Improvement Proposal (CIP) programs skyrocketed. Cases during the first week of January were about three times the expected load. Of 179 cases received, 68 were directed toward Operation Underbrush; 55 were CIPs from salaried employees, 13 were ESs from hourly personnel.

Next Centaur Flight Will Be Lunar Step

The stage was set early this month for the fifth research and development flight of GD/Astronautics high-energy Centaur, as both the vehicle and the Atlas which will launch it were airlifted to Cape Kennedy.

The combination, Atlas-Centaur 5 (AC-5), is scheduled for test flight within the next two months.

During this flight, Centaur is scheduled to insert a dynamic model of the Surveyor spacecraft into a flight path simulating an operational lunar trajectory.

Late this year, Centaur is slated to begin operational flights with an actual Surveyor spacecraft, directed toward lunar exploration prior to manned landings on the moon.

GD/Astro is developing Centaur for NASA, under direction

of the space agency's Lewis Research Center, Cleveland, Ohio.

Using liquid hydrogen, a fuel which provides nearly 40 per cent more power than conventional propellants, Centaur on Nov. 27, 1963, was the first space vehicle to be powered in flight by this new-generation rocket fuel. To date it has scored three consecutive successful research and development test flights.

GD/Astro's Atlas, which serves as launch vehicle for Centaur, has currently compiled a record of 26 consecutive successes as a space launch vehicle. The versatile booster has participated in such missions as the manned orbital flights of Project Mercury, Ranger missions to the moon, the Mariner mission to Venus, and the current Mariner-Mars flight.

Giant 'Vacuum' Bottle Added to Test Center

Final major installation at Site B of the new GD/Astronautics Test Center northeast of San Diego was completed with delivery late last month of a massive, 13,000-gallon liquid hydrogen storage tank.

The tank is the larger of two major storage vessels (a smaller unit contains liquid nitrogen) which will support seven separate test slabs for a wide range of liquid hydrogen testing.

The hydrogen tank is some 50 feet long, and has a 10-foot outside diameter. It weighs approximately 30 tons.

Actually a "king-sized" vacuum bottle, it is composed of an outer carbon steel vessel, inside of which a second tank of stainless steel is suspended on thin titanium rods.

Space between the vessels has been evacuated to induce a vacuum equivalent to an altitude of over 100 miles.

The vacuum provides an effective insulating barrier, reducing "boil off" rate of the super-cold hydrogen stored within to .25 per cent per day.

Test pads are serviced with liquid hydrogen from the tank carried through two-inch (inside diameter) transfer lines, vacuum-jacketed, again to reduce hydrogen waste through boil off.

The big tank was built by Cosmodyne Corp. of Los Angeles, with engineering by GD/Astro's Dept. 250, S. E. Chavez, supervisor, and G. R. Morton. At Site

B, Al Ward is plant engineering field engineer, with Wes Muse, project engineer.

The 2,420-acre General Dynamics-owned Test Center (GD/NEWS, Nov. 18, 1964) is just north of the government-owned GD/Astro-operated Sycamore Canyon site. The center is to be developed over a period of years, and permits centralization of GD/Astro's test programs with room for future expansion.

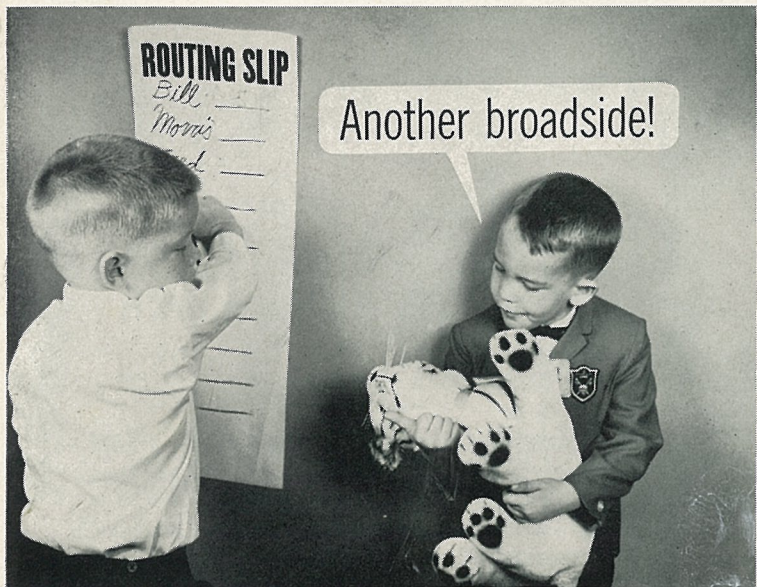
1964 Tax Deduction Amounts Announced

GD/Astro employees may list amounts deducted from their paychecks for dependents' insurance as a medical expense in itemizing deductions for 1964 income tax returns.

Weekly dependents' insurance cost from Jan. 1 to Oct. 4 was \$2.59. From Oct. 5 through Dec. 31 the cost was \$2.97 per week. For the entire year the total is \$141.83, hourly; \$144.42 salaried.

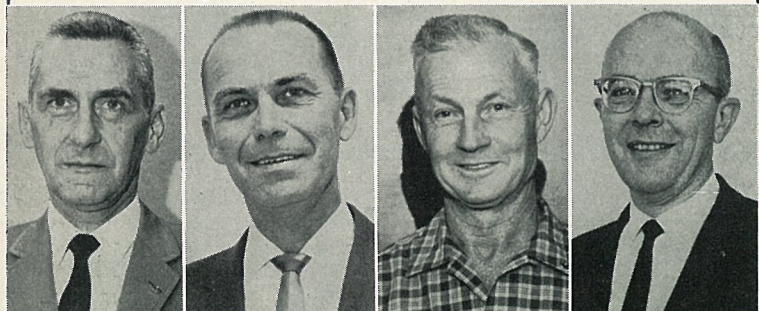
On federal income tax returns California employees may deduct as a tax their contribution to the California State Disability Plan. This amounts to one per cent of the first \$5,100 earned, a maximum of \$51. It should be noted that this item is not deductible in filing California state returns.

In addition, contributions to GD/Astro Employees' Con-Trib-Club are deductible as charitable donations.



OPERATION UNDERBRUSH—Marty and John, sons of GD/Astro's Bob Weissinger, and the Underbrush Tiger are back to suggest a long look at those distribution lists. The ideal situation is one where everyone receives all the information he needs to do his job—and nothing more. "Targeted communications" do the job better!

Log Book Entries



Dr. H. F. Dunholter, Dept. 500-0, left, and George F. Oliver, Dept. 360-1, have received 25-year emblems at Astronautics.

Service Emblems

Service emblems due during the period Jan. 16 through Jan. 31.

Thirty-five-year: Dept. 576-3, H. F. McKewan.

Twenty-five-year: Dept. 143-1, W. M. Scott; Dept. 147-1, L. P. Birse; Dept. 405-2, J. D. Hayman; Dept. 420-8, C. J. Johnson; Dept. 521-0, T. A. Billings; Dept. 966-0, L. V. Clements; Dept. 971-5, J. R. Horner; Dept. 989-4, G. C. King.

Twenty-year: Dept. 147-1, L. B. Stockton.

Fifteen-year: Dept. 170-9, Etta R. Beckner; Dept. 453-0, J. R. Parga; Dept. 654-2, C. C. Campbell Jr.; Dept. 732-0, C. F. Davis; Dept. 733-0, Gladys A. Pederson; Dept. 756-0, G. F. Lang; Dept. 758-0, Charles Allen; Dept. 835-2, J. R. Thompson.

Ten-year: Dept. 125-0, W. K. Stillman III; Dept. 140-0, Geraldine J. Habermeyer; Dept. 146-4, Andrew Galli; Dept. 250-2, G. L. Barry; Dept. 369-0, A. H. Hoines; Dept. 374-3, J. W. Trapp; Dept. 376-1, Lavelle D. Wagley; Dept. 506-2, Alexina N. Markham; Dept. 549-9, Arthur Sansone; Dept. 632-5, F. A. Robb; Dept. 693-1, M. S. Fader; Dept. 733-0, H. C. Cunningham Jr.; Dept. 780-2, J. R. Medina, H. R. Smith; Dept. 811-0, W. E. Farrell Jr.; Dept. 812-0, R. M. Edinger; Dept. 832-1, Bonnie R. Corum; Dept. 960-0, M. R. Barlow.

Papers Presented

CAMPBELL—C. C., Dept. 652-5. "High Reliability for Space Launch Vehicles," National Symposium on Reliability and Quality Control, Miami, Fla., Jan. 12-14.

HARSHBERGER—F. C., Dept. 596-0. "On the Parameters Affecting Normal Shock Location in Underexpanded Gas Jets," submitted to AIAA Journal.

MIYAJI—M. C., Dept. 563-1. "Proposed Tentative ASTM Liquid Oxygen Impact Sensitivity Test Method," submitted to American Society for Testing and Materials.

Invention Disclosures

GOBLE—G. J. Jr., Dept. 262-2, A Space Balance.

INGRAM—D. L., Dept. 490-3, Torque Wrench Employing Applied Ultrasonic Vibration.

KUZYK—W., Dept. 963-1, Wide Range Temperature Transducer.

Cost Reduction

RELIABILITY CONTROL

Forty-two persons responsible for Cost Reduction and Value Control projects with total savings of \$1,860,833 recently received certificates of commendation from Director P. I. Harr.

Savings over \$750,000: "Red" Mowery (2).

Over \$250,000: Jim Tate.

Over \$75,000: Ted Lamoureux.

Over \$50,000: Fred Baebler (2), Hal Story.

Over \$25,000: Gordon Briggs (2), Paul Haggard, Ralph Kemp (2), Bill Olson (2), Lee Sastro, Dick Schmidt.

Over \$10,000: Bob Cunningham, John Durr, Vic Frankfather, Jim Frogge, Clyde Hooper, Ray Kаланquinn, Fred Lay, Roy Lessard, Tom Miller, Les Milton, Jim Sugg, John Vondracek, Yale Yelverton.

Over \$1,000: "Butch" Amaral, Andy Anderson, Stan Bobrowski, Bill Brotherton, Les Dasso, Lonnie Franklin, Bill Hovey, George Hunter, Obie Kennann, Herb Mishler, Pete Nagy, George Neal, Nick Nicholson, John Norman, "Sy" Rose (2), Jack Ross, Wally Seaforth, Joe Spieker.

Deaths

BJORKMAN—Ivan W., Dept. 250-1. Died Dec. 24, 1964. Survived by wife, Mildred; sons, Robert, Richard, Michael; daughter, Marilyn.

COOPER—James E., Dept. 150-0 (Ret.). Died Jan. 1. Survived by wife, Grace.

KNEFLER—Charles F., Dept. 811-1. Died Jan. 8. Survived by wife Kathleen Mary; three children.

OSTLER—Clyde W., Dept. 756-0. Died Jan. 3. Survived by wife, Alice.

PRICE—Carl M., Dept. 835-5. Died Dec. 28, 1964. Survived by wife, Alice.

General Dynamics NEWS

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Fort Worth Editorial Offices, between Cols. 71-C and 71-D, Assbly. Bldg., GD/Fort Worth, Mail Zone T-63, P.O. Box 748, Fort Worth, Texas 76101. Telephone PErshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

Pomona Editorial Offices, Room 119, Bldg. 1, GD/Pomona, Mail Zone 3-13, P.O. Box 2507, Pomona, Calif. Telephone, National 9-5111, ext. 6226-5279. Staff: Glenn Kehr, editor; Carol Colbert. Daingerfield news office, P.O. Box 947, Daingerfield, Texas. Telephone Lone Star, Texas, 2211, ext. 424.

Affiliated editions of General Dynamics NEWS are published in Rochester, N. Y., covering GD/Electronics and Stromberg-Carlson, editorial offices, 100 Carlson Road, Hubbard 2-2200, ext. 2555. Fred E. Voss, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, 446-3129. Ed Caffrey, editor.

Systems Command Creates Division For Contract Mgt.

A new Contract Management Division has been created within the Air Force Systems Command with division headquarters at the Los Angeles Air Force Station.

Commanding the new division is Col. Fred L. Rennels Jr., who has commanded the Western Contract Management Region (GD/NEWS, Jan. 6).

Responsibility for Department of Defense contract management activities in plants assigned to the Air Force will be administered by this new group. This includes Air Force Plant Representative Offices, like that at GD/Astronautics, Test Site Offices and Contract Support Detachments.

Ultimately, the division will absorb current field units and responsibilities of the Western Contract Management Region, some plant offices of the Eastern Contract Management Region and the Central Contract Management Region.

Staffing of the new division headquarters will be made up predominantly of personnel now assigned to the WCMR, augmented by personnel from the other two regions.

Col. Rennels and his organization report to Gen. B. A. Schriever, commander, AFSC.



RIGHT WAY — Colette Cole, Dept. 250-2, demonstrates "turn it off" philosophy which is current objective in GD/Astro utility conservation effort. Switching off unneeded lights can save substantially on electrical costs. Posters, such as one Colette holds, will appear throughout plant as reminders to all employees.

Flick the Switch

Use All the Light You Need, But Please Don't Waste It!

Save money at the flick of a switch? It can be done! Not by some

Careful Scrutiny of Tasks Reveals Many Ways to Save

Cost reduction at GD/Astro-nautics is a creative process.

It consists of thoughtful, objective analysis of products or processes, an open mind, and the ability to take a "second look" at things which have become "second nature."

In GD/Astro's management systems department, Director J. H. Johnson recently presented certificates to employees who used this technique to locate money-saving ideas, and then—within the framework of the division's cost reduction and value control function under Manager E. D. Heller—applied the drive, initiative and follow-through to put them to use.

Savings on 17 Cost Reduction Projects totalled \$787,071.

Taking an objective look at their operations and challenging every job detail—(Why is it necessary? Can it be eliminated or combined? Can it be economically mechanized?)—paid off for R. W. Kleinhans, Dept. 170-9 (two projects), C. G. Perdue, Dept. 151-0, and M. R. Obie, Dept. 101-0.

Perdue procured an automatic typewriter to eliminate retyping and proofreading unchanged pages as configuration management reports were reissued. Obie found that five rented data processing units could be eliminated by equipment centralization. Kleinhans used "essential" as a key word in realigning telephone services.

A search for greater efficiency and elimination of waste resulted in other projects.

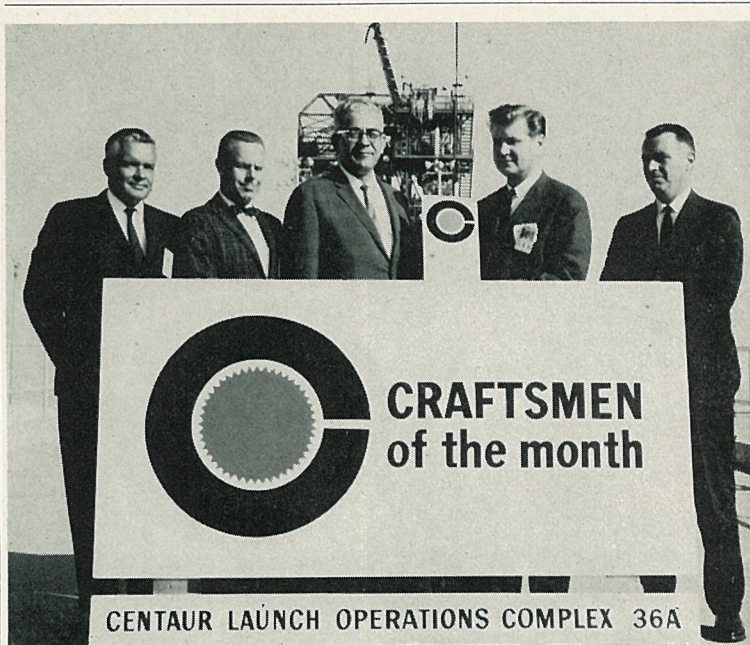
G. W. Bates, Dept. 151-0, eliminated wasted travel time and improved communications by asking for relocation of his department nearer to other units which work closely with it. R. Hughes, Dept. 101-4, substituted less expensive sulphite bond for multi-lith plates as masters for photo offset reproduction.

"Is work flow such that each operation produces the optimum results?" asked H. C. Courington, Dept. 151-0.

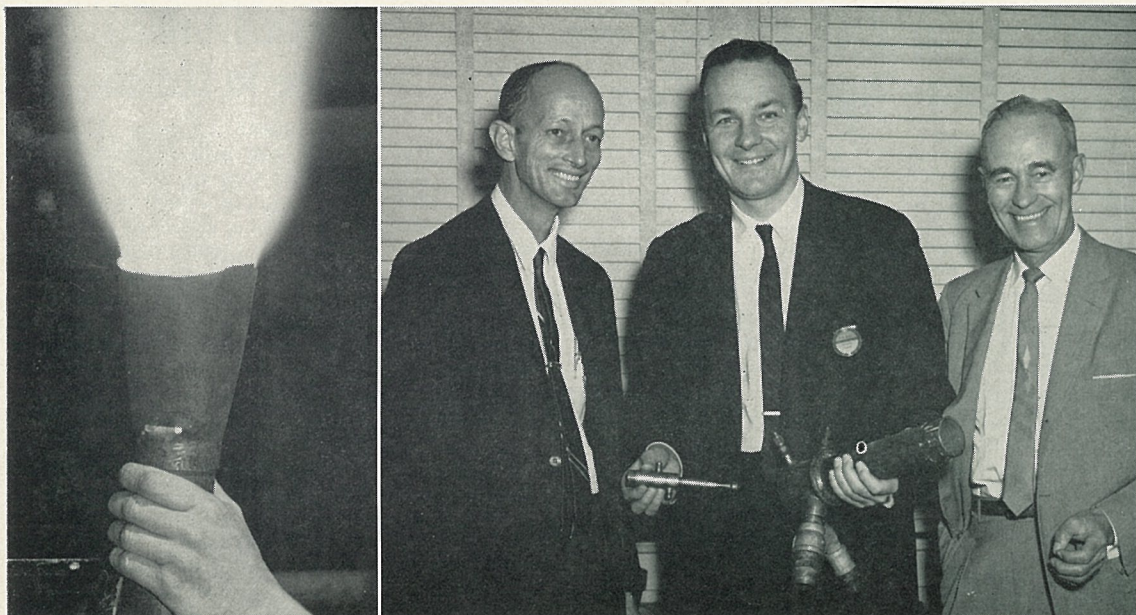
The outgrowth was a resequencing of configuration management functions so that change review and programming precedes production of released design. The cost of changes is eliminated since review is done before reproduction. Savings: over \$114,000.

"Home work"—keeping up-to-date with the latest technology—is another "must."

G. L. Davis, Dept. 101-7, reduced



CAPE CHAMPS — Employees of GD/Astro's Complex 36A at Cape Kennedy earned November honors in division's Do Good Work program for Eastern Test Range operations, with Craftsmanship plaque presented to Test Conductor Dan Sarokon. On hand for presentation were, from left: Warren Bradford, reliability control manager; Dodd Brandt, NASA Goddard Space Flight Center; K. E. Newton, ETR operations director; Sarokon; Roger Lynch, Centaur launch operations manager.



NOVEL CONCEPTS—Examining a High Mach Pilot Ignitor (HIMAPIG) Unit and Main Burner Assembly invented and developed by Daingerfield Engineer H. T. Childree, left, are Clark Jung, center, marketing, Corporate Headquarters, and W. H. Robinson, manager of contracts, Daingerfield division. At left, cool operation of new development is demonstrated using 2-inch assembly with input of two million BTU per hour.

Daingerfield Engineer Develops Ignitor Unit

A High Mach Pilot Ignitor (HIMAPIG) Unit and associated burner assemblies, invented and developed by H. T. Childree, Daingerfield division engineer, are expected to have many industrial applications.

Childree's primary interest at the Ordnance Aerophysics Laboratory, Daingerfield, is instrumentation with secondary duties to satisfy specific test objectives. Some of his previous achievements to fulfill test objectives have been early development of shadowgraph picture equipment, high altitude ignitors and ignition supplies, colored Schlieren photographs, facility fire alarm system, and selectable automatic telephone dialing unit.

The HIMAPIG Unit is another outgrowth of Childree's efforts to meet a specific requirement. The problem in this case concerned operation of a commercial gas pilot system.

J. E. Arnold, Daingerfield division manager, and J. T. Carroll Jr., superintendent of the machine shop, were first to recognize the importance of Childree's new development and the HIMAPIG Unit was immediately installed on a commercial burner assembly used for an air drying system. This installation has provided trouble free service.

A burner assembly was developed to operate in conjunction with the HIMAPIG Unit as a replacement assembly for a fuel

oil system on an annealing furnace. Results have been excellent.

C. W. Dawson, patent administrator at GD/Fort Worth, arranged demonstrations for various gas suppliers and industrial users. Reactions have hailed the new development as needed by the industry.

Patent applications to protect the novel features of these concepts have been handled by the GD/Pomona patent staff.

The HIMAPIG Unit is a small size combustion unit with many advantages. Demonstrations have shown that the unit provides a high velocity, high temperature flame offering greater penetration into a combustible mixture for smoother ignition. The spark plug and/or flame sensor rod is desirably located and protected from environmental conditions. Variations of air and gas do not affect operation and the unit will sustain operation under extreme environmental conditions. It will ignite and sustain operation when submerged in water.

The main burner assemblies have also been demonstrated. Advantages include a large input-to-weight ratio, compact size, impossibility of flash back, cool operation even with oxygen injection, ability to operate from a conventional control system, and ability to provide various exit flame shapes. These assemblies are expected to have numerous applications for various types of kilns, furnaces and ovens.

Science Information Center Offers Guide to Data Sources

Services of the National Referral Center for Science and Technology, Library of Congress, Washington, D.C., have been offered to General Dynamics scientists and engineers seeking in-

formation sources on technical subjects.

The Center, established with the help of the National Science Foundation more than a year ago, is designed to assist those in need of information by putting them in touch with those who can provide it. To this end, a central register has been created providing a ready guide to information resources covering a wide range. The Center does not itself provide information, but acts as a guide to source material. In response to requests, the Center will cite names and addresses of appropriate resources and describe briefly the kind of assistance that may be expected.

Services of the National Referral Center are available without charge to any engineer or scientist, and requests may be submitted by telephone, through personal visit, or by correspondence. Inquirers are asked to define their area of interest as specifically as possible and to indicate the information resources with which they already are familiar.

Requests may be directed to the National Referral Center for Science and Technology, Library of Congress, Washington, D. C. 20540.

Fatigue Laboratory Will Evaluate Life Of Chrome-ite Plate

GD/Convair has received a study contract from the Air Force to evaluate the fatigue life of chrome-ite plated metal specimens over the next six months.

The task, in the amount of \$10,500, will be accomplished in the Convair fatigue laboratory under direction of Clarence Smith, fatigue specialist.

Studies will be directed to determining effects of high loading on subsequent fatigue life of axially-loaded aluminum alloy specimens.

According to Smith, preliminary investigation shows that the thin chrome-ite protective coating on exposed parts of aircraft, such as landing gear axles and flap tracks, is much less affected by high loading than normal chromium plating. The improved chrome-ite, .0002-inch thick compared to the .003-inch thickness of normal plating, adheres closely to the metal and does not crack with high loads.

Objective of the current test program will be to find how high the loads can be applied before reaching a point—if any—at which the chrome-ite would affect the fatigue life of the metal.

Monthly progress reports and final evaluation by this July will be submitted to the Air Force Flight Dynamics Laboratory of the Wright-Patterson AFB, Ohio, Research and Technology Division.

F-102 Pilots Support Viet Nam Missions

Thirteen Air Force pilots of F-102s, based at Naha Air Base, Okinawa, received Air Medals last month for "meritorious achievement" while flying combat support missions over Viet Nam this fall.

The Convair-built interceptors were located in the Republic of Viet Nam to augment Viet Nam's Air Force air defense.

The Air Medals, presented by Maj. Gen. Albert P. Clark, commander of the 313 Air Division were awarded to pilots of the 16th Fighter-Interceptor Squadron for "meritorious achievement while participating in aerial flight when distinction above and beyond that normally expected of professional airmen was involved."

GD Man Nominated For STWP President

Charles W. Thelen, B-58 service engineering publications supervisor at FW, was nominated for president of the 3,800-member Society of Technical Writers and Publishers (STWP).

For the past three years, he has served simultaneously as society treasurer, member of the executive council, and chairman of the finance committee.

Flight Test Program For F-111 To Involve Bases Coast to Coast

An intensive F-111 flight test program which will be conducted virtually from coast to coast and run through 1968 moves into routine operation next month.

Most testing will be carried out at Edwards AFB, Calif., where a nucleus of about 100 GD/Fort Worth people are awaiting arrival of F-111 No. 1 around Feb. 15.

Testing at Eglin AFB, Fla., is slated to start in August, 1965.

Assignment of a Navy F-111 to Patuxent River Naval Air Station, Md., is expected sometime in 1967.

Bob Moller, manager of F-111 test, has announced that Victor Allwardt will serve as base manager at Edwards AFB, while C. C. Widaman will draw the assignment at Eglin AFB.

An estimated "five to seven" flights are to be completed at GD/FW before F-111 No. 1 is ferried to Edwards.

"We're attempting to coordinate arrival of the airplane with a rather large contingent of people," Moller said. A vanguard of GD/FW personnel started setting up operations at the base in December.

Category I testing has two aims: defining the F-111's operational envelope, and integrating components and subsystems.

"Bit by bit we'll discover the plane's true capability—how fast it can fly, how far, its low and high-level performance parameters—the whole spectrum of performance capability," Moller pointed out.

The F-111's subsystems and "black boxes" will be tested exhaustively for compliance to specifications. Their reliability and compatibility with all other systems will be observed closely.

"For example," Moller said, "we must make certain not only that the air conditioning properly cools all components, but that it meets other exacting F-111 maintainability and reliability requirements."

Category II testing will follow. The Air Force will conduct the advanced tests to evaluate the F-111 as a "total weapons system" and to provide handbook data for Tactical Air Command.

The operation at Eglin will involve 50 to 60 GD/FW personnel at the outset and increase proportionately as the program moves ahead, as will the program at Edwards.

Tests at Eglin mainly will involve usage of the facility's gulf missile range and radar complex.

Of the original 23 F-111s slated for the RDT and E programs, 18 are ticketed for Air Force, five for Navy.

Seven F-111s are scheduled for Category I Air Force testing at Edwards; two will be used at Eglin.

One F-111 will be used solely for adverse-weather testing. It will be tested in the cold hangar at Eglin, then flown to diverse climates—including Alaska.

The first Navy F-111 will un-

dergo extensive Navy bailment tests (comparable to Air Force Category I) at a Grumman facility on Long Island.

Of the four remaining Navy F-111s in the RDT and E program, two will undergo testing of the Phoenix missile system at Hughes Aircraft, Culver City, Calif., and two will be given "Navy tests" at Edwards.

Moller stressed that the operation at Edwards will be a completely integrated operation between GD/FW and Grumman Aircraft Engineering Corp., GD/FW's principal subcontractor and associate. The latter will have responsibility for all Navy tests.

"But we will have one completely integrated operation," Moller said, "with both companies sharing equipment and facilities. GD/FW will, of course, be responsible for Air Force tests, while Grumman will be responsible for tests peculiar to the Navy F-111."

JET AIRCRAFT TIRE DEVICE PATENTED

General Dynamics Corporation has received a patent issue on a safety device for venting jet aircraft tires, invented originally by two Convair engineers.

John Hudson, design specialist, and James Dimin, service engineer, both of GD/Convair at the time of filing of the patent application in 1958, developed the fusible plug arrangement to vent aircraft tires and prevent them from blowing up on the runway because of generation of friction heat during braking.

Patent for the safety device (No. 3,157,219) was received by the Corporation the middle of November of last year after long investigation by the Patent Office that Hudson and Dimin were the first in the industry to conceive the invention.

The company expects to license the invention to manufacturers now making safety devices for venting tires for use on large jet aircraft.

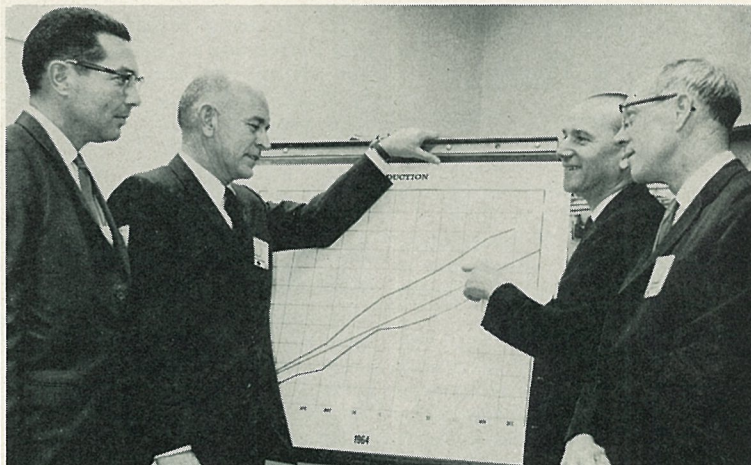
A. Crawford Truex Dies Suddenly at 44

A. Crawford Truex, 44, Convair engineer since 1947, died suddenly Jan. 3.

Truex, who had been closely associated with important Convair and Fort Worth products, was a weights design specialist in pre-design at the time of his unexpected death.

He was assigned to the F-102/F-106 project office during production of the jet interceptors and as assistant project engineer for the 880/990 jet transport program. Recently he had been associated with F-111 pre-design.

A native of Hendersonville, N. Car., Truex is survived by his wife, Frances, a son and a daughter. Private services were held at a Chula Vista mortuary Jan. 5.



UP TREND—Continued progress in GD/Astronautics cost reduction efforts is typified by record achieved in management systems department. Here accomplishments are reviewed by Director J. H. Johnson, left, H. C. Courington, Conrad Wronski, department CR coordinator, and R. W. Kleinhans. Courington and Kleinhans were top money-savers among those recently presented certificates by Johnson.



THIS IS IT—Snuggled under blanket of fresh snow is Big Bear's Wawona Lodge, destination of those who join in General Dynamics Ice Skating Club's annual Winter Weekend at Big Bear Lake, Feb. 12-14. Open to all GD folk, event offers accommodations, three meals and wide range of recreation for only \$12 per person with reservations now accepted at employee services outlets.

Reservations Are Being Taken For Big Bear Winter Weekend

It's that time again. This year's "Winter Weekend at Big Bear Lake," sponsored by General Dynamics Ice Skating Club, has been scheduled for Feb. 12, 13 and 14, with reservations now being accepted at employee services offices at Plant 1, Plant 71 and Plant 19.

The entire Wawona Lodge at Big Bear has been booked for the event. It provides 10 rooms with baths for two, three, four or five persons, plus 18 cabins accommodating from two to 12.

Saturday and Sunday breakfasts and Saturday dinner will be catered by Gil Hutter, Prophet Co. manager at GD/Astro.

Prime activity is ice skating (including a private GD skating session Sunday morning), but Commissioner Bud Davies stated

that "snow has been ordered" for benefit of ski buffs. Music for dancing will be provided in the lodge Saturday night.

Total cost of the trip is \$12 per person, including two nights' lodging and three meals. Children under 8 are charged half price. Participants are expected to arrange their own transportation.

"Drivers are cautioned to bring tire chains and emergency equipment," Davies said.

The event is limited to 100 persons, and full payment must accompany reservations. No reservations will be accepted after Feb. 5, and no cancellations can be made after that date.

Further information is available from Barbara Simpson, Plant 71 ext. 4041.

Tours of Wide Variety Offered Dynamics Folk This Summer

Tours to almost anywhere, of lengths to fit most vacations, and at reasonable prices, are being made available again this year to General Dynamics personnel through San Diego Industrial Recreation Council.

Leading the list are trips to Hawaii. The nine-day "Waikiki Holiday" costs \$239, with five departure dates available. For \$332, an air-sea cruise—fly over, return via Matson liner—takes 11 days. A tour of five islands costs \$395.

Heading east are two nine-day visits to the New York World's Fair, departing June 19 and Sept. 18 for \$311.

Northbound is an Alaska cruise,

Skate Club Arranges Mission Valley Rate For GD Ice Skaters

Employees seeking "something different" for recreation have been invited by Commissioner Bud Davies to look into General Dynamics Ice Skating Club.

"The best way to learn about us," he said, "is to attend one of our weekly sessions at Mission Valley Ice Plaza."

The group skates at the shopping center rink each Thursday, taking part in open skating from 6:30 to 8 p.m., then continuing with a private session at no extra cost. The club also provides free instruction for beginners, intermediates, even for "dancers."

Club members get half-price rates on admission and skate rental. Full membership details are available at the rink each skating night. Dues are \$1 per year (April 'til April) per family.

Facilities of ARA Health Club Available to Dynamics Families

Those vowing improved physical condition, weight losses or gains at the start of 1965 were reminded this week of facilities and services available to all General Dynamics employees at the ARA Health Club.

Astronautics Recreation Association operates the club, located in the ARA Clubhouse adjacent to Astronautics, for the convenience of all General Dynamics employees in the San Diego area.

Completely outfitted with the latest physical conditioning equipment, weights, machines, showers

and lockers, the club also features a Sauna bath. Both male and female instructors are on hand to advise and instruct individuals in their privately-prescribed conditioning program.

Cost per year is \$18 per individual or \$27 per family, a fraction of the cost of similar programs in private clubs.

Hours have been established to afford maximum opportunity for use of all facilities.

For instance, "ladies only" hours are observed from 9:30 to 11:30 a.m. Monday through Thursday and from 2 to 7 p.m. on Tuesdays and Thursdays. "Men only" hours are 11:30 a.m. to 10 p.m. Monday, Wednesday and Friday. Special family hours (for both men and women) are from 7 to 10 p.m. Tuesday and Thursday and from 10 a.m. to 5 p.m. Saturdays.

Information is available at the Health Club or by contacting Director Frank Echevarria, ext. 1111 at Astronautics, during normal operating hours.

Business Courses Offered in-Plant At Astro, Convair

Registration opens this week for all General Dynamics people and their friends intending to enroll in Business Systems Management courses offered by the University of California Extension in-plant at Convair and Astronautics.

Second-semester classes, which lead to completion of the Professional Designation requirements in Business Systems Management begin the week of Feb. 8. Descriptive brochures may be obtained by mail or in person by contacting either Convair educational services, ext. 491, Plant 1; or Astro educational services, ext. 1931, Plant 71.

Enrollment forms in the brochures must be completed and sent with the course fee directly to the University Extension office in San Diego. Registration will be taken through the second class meeting of any course.

The new Business Systems Management educational program, designed to familiarize persons in business and industry with modern methods of processing of business information, computer techniques, management information and control systems, was started last fall in the GD divisions.

Acceptance and enthusiasm was much greater than anticipated, say educational services personnel at both divisions. Initial enrollment reached 150 with the majority of those completing the first semester the first week in February planning to complete Phase I, or the Professional Designation requirements, by June. They then will be eligible to enter the advanced phase of the program, which after successful completion of 24 units, culminates in a Senior Award certification.

Mgt. Clubs in Area Will Meet Jointly

General Dynamics Management Clubs in San Diego will join with other San Diego Area Council groups of the National Management Association at a combined meeting Feb. 8 in the city's new Convention Center.

Ladies and civic dignitaries will be honored guests at the dinner meeting. Ronald Reagan, well-known Hollywood actor now active in political affairs, will be featured speaker.

Highlight will be presentation of the NMA award to a San Diego management member chosen as the top management man of the year for his contributions to civic and company management activities. Also, door prizes, totaling over \$250 in value, will be given away.

Social hour starts at 6 p.m. The catered dinner will be served at 7.

Convair, Astronautics, GD/Electronics, and Stromberg-Carlson club members may purchase tickets now through usual outlets.

Salvage Schedule Involves Four Sats.

Salvage yard schedule for the next four Saturday mornings at Astro and Convair sites is:

Astro—Jan. 23, Feb. 6.
Convair—Jan. 30, Feb. 13.

Technical Writing Course to Convene

"Technical Proposal Writing" will be the sole in-plant course offered at Convair Plant 1 for the coming spring school semester.

The course, listed as Technical Writing 5, is open to all General Dynamics employees under sponsorship of Convair educational services.

Material will cover various types of documents incidental to submitting bids on and outlining capabilities for production of end products which do not exist at the time the proposal is written. Proposal categories will be defined and the purpose of each category clarified.

Advance registration will be taken today (Jan. 20) at 5 p.m. in Bldg. 14, Room 6, at Plant 1. Enrollment will be accepted to Jan. 29 by L. W. Turner, ext. 491 or 464 at Plant 1.

Classes will start Feb. 9 in Room 8, Bldg. 14, Plant 1 and will be held each Tuesday from 5 to 8 p.m. throughout the school semester. Instructor is Louie Henderson. Class fee is \$1.50 per student, plus cost of textbook.

Earl Wesp, Who Joined Company By Accident, Ends 40th Year

Earl Wesp of Convair tool manufacturing, who stepped into a job with Consolidated Aircraft as a young boy of less than 18 without even applying, rounded out 40 years with the company this month.

Wesp said that his joining Consolidated was a fluke. He had taken a day off from his job at American Radiator Co. to visit the small new plant in Buffalo, N.Y., with a job-hunting friend.

"I just wanted to see what an aircraft company looked like," he recalled. "And, I was more surprised than anyone when Harry Showalter (in charge of Consolidated's panel shop) offered me a job."

The 55-cent-an-hour wage looked pretty big to a boy who was making 35 cents an hour as a pattern-maker, so he took it.

The friend didn't land a spot!

Wesp started as a panel builder on the all-wooden wing of the PT-1 trainer and worked on the other wooden-wing planes which followed. In the early 30s, when the Admiral seaplane went into production, Wesp transferred to wood tooling where all form blocks, assembly fixtures, and mockups were made—entirely of wood.

He rose up the ladder in the next 10 years to supervisor in charge of all tooling at the time of the move to San Diego in 1935.

Wesp, his wife and seven-month-old son, Ronald (former Convair engineer), traveled West on the same train with Walter Koch and family. Koch, now at Astronautics, was first in the company to reach the 40-year mark last fall.

At San Diego, Wesp continued as wood tooling supervisor under

Phil Koenig, chief tool engineer. As such, he had charge of the model shop from the time it was started in 1937 until it was transferred to engineering some years later.

He rose to general foreman of tool manufacturing in 1941, and has held other supervisory posts, all in tool manufacturing, in the years since. He now is leadman over the form blocks section at Plant 1.

\$150 Writing Awards Earned by Authors

Writing Awards of \$150 each went this month to two Convair people who had their articles published in current technical magazines.

Gertrude M. Hunter, of Dept. 6 and editor of the Convair Traveler, authored the article, "Assembly O-Ring Seals," published in the January issue of Assembly Engineering.

Alan H. Wolfson (Dept. 28-0) received his award for an article, "Spares Estimating with EASE," published in this month's issue of Business Automation.

Danny Blum Elected Garden Club Prexy

Danny Blum heads the combined ARA-CRA Garden Club as president for the current year following election of new officers Jan. 6.

Vice president is R. D. Bradshaw of Astro and secretary is Carolyn Buman, also of Astro.

Next meeting will be Feb. 3 in Floral Association Bldg., Balboa Park, with a special invitation to all Convair and Astro retired people to attend and join in Garden Club activities.



LONG SERVICE — Earl Wesp of Convair Dept. 401-9, (second from right), who joined Consolidated Aircraft Co. at Buffalo, N.Y., in 1925, observed 40th anniversary this month with, from left, W. D. Reed, manager of manufacturing; O. W. Sweetland, superintendent of tooling and methods; D. C. Wilkens Jr., director of industrial relations; F. L. Chamberlin, tool manufacturing foreman; Wesp; Convair President J. H. Famme.

Requests For Tuition Refunds Must Be In Early In Semester

Jack Croft, GD/Astronautics chief of educational services, reminds employees of deadlines for submitting spring semester Tuition Refund Requests.

All requests must be submitted no later than three weeks after the first class session.

Under this program, Astronautics reimburses employees for

tuition costs of job-related, college-level courses up to a maximum of \$150 per calendar year. Students, however, must submit requests—forms are available through educational services office (Bldg. 33)—and successfully pass the course while remaining on the company payroll before reimbursements are possible.

"Each year we have a few who do not meet the deadlines," Croft said. "We have no alternative and must reject the request in such cases."

Almost 900 Astro students received more than \$44,000 for courses taken during spring and summer semesters last year.

Further information on this program is available through educational services, ext. 1931, Plant 71.

Two Open Shoots Set At Gillespie Range

Open shoots scheduled at Gillespie Field Gun Range this month include a registered ATA trapshoot next Sunday (Jan. 24) and the monthly Troy shoot Jan. 31.

Friends of all GD people are eligible to join the Gun Club as associate members, \$10 a year. Memberships are available at the Gillespie Field Clubhouse each Sunday morning. The range is open for use on a year-round basis each Sunday from 9 a.m. until 2 p.m. and Wednesday nights, 7-10 p.m.

Score Return From Christmas in Mexico

Twenty-one Convair and Astro travelers returned home Jan. 3 from the first Christmas holiday tour to Mexico sponsored by Astro Management Club with memories of fireworks, posadas, pinatas in place of their more customary Christmas trees and Santa Claus.

"Christmas in Mexico," a specially-arranged two-week trip during the year-end holidays, was conducted by James Hardison of Convair, who plans to make it an annual event in addition to his regular summer tour for GD people.

Due to shortage of hotel accommodations at Acapulco, six of the group had the rare experience of occupying the summer home of Mexico's outgoing president, Lopez Mateos.

TICKET DELIVERY PRACTICE DROPPED

A change in procedure affecting GD/Astro business travelers has been announced by the division's Reservation Center.

Although the center continues to make airline reservations for personnel traveling on company business, the practice of ticket delivery has been suspended. Travelers are now responsible for picking up their own tickets at the appropriate Lindbergh Field airline office within the time specified by the airline.

Company air transportation is provided daily (Monday through Friday) between San Diego and Vandenberg AFB, with stops off the direct route made only under urgent circumstances. The flight leaves San Diego (North Flight Gate) at 8 a.m., arriving Vandenberg AFB at 9:20. Return flight leaves VAFB at 4 p.m., arriving Lindbergh Field at 5:20 p.m.

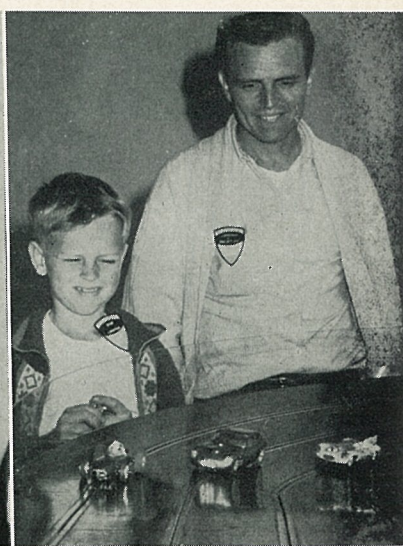
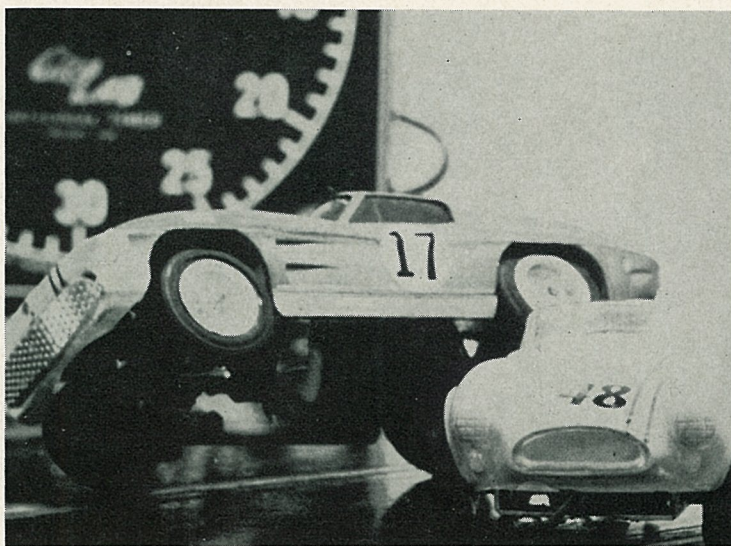
Division Aero-Commander service to Norton and Edwards AFBs is provided on an "as required" basis, with packages for these bases carried only when prior arrangements have been made for acceptance of the package upon arrival.

Explorers Schedule Desert Field Trip

An up-coming field trip will be discussed at the meeting of ARA Explorers Club, 7:30 p.m. today (Jan. 20) in ARA Clubhouse, and a 40-min. film concerning a trek over a nearly impassable old wagon train route in Arizona will be shown.

The two-day field trip, Jan. 23-24, has as its destination Dos Cabezas Spring in the Anza-Borrego State Park area, and is planned as a car-camp affair. Trip leaders will be Joe and Kay Quijada.

Prospective participants unable to attend today's meeting can learn details by contacting ARA Commissioner Dick Bowen, Plant 71, ext. 438, or at 278-9864.



THRILLS GALORE—Except for oversize timer in background, photo at left displays full-scale realism as Corvette hurtles out of control behind Ferrari. Right photo brings scene into perspective, as 10-year-old Eddie Foland controls slot car, while his dad, Ed, ARA commissioner for activity, smiles approval. Slot car racing, only something more than a year old as an ARA activity, has grown to be among most popular for all ages.

Sports & Recreation



IN CHARGE—New officers of ARA's Astro Toastmasters Club installed earlier this month include Dale R. Nash, left, Dept. 146, education vice president; Les Dasso, Dept. 146, administrative vice president; President H. O. Story, Dept. 146; Treasurer Stan Brooks, Dept. 140; Don Krosch, Dept. 141, sergeant-at-arms. ARA Commissioner Earl G. Smith, Dept. 141, presided at the meeting, with Roy Gilliland, Dept. 140, toastmaster.

'Double-Feature' Band Event Set For Teens This Saturday

Two up-coming dances have been announced by ARA Teen Club, with the first scheduled this Saturday (Jan. 23), 7:30-11 p.m. in ARA Clubhouse, as a "double feature" event with four hours of music from two bands.

"The Centurys" and "The

Rhythm Kings," both local groups, will alternate throughout the evening.

On Feb. 6 "The Spats" will return to perform such numbers as their recorded hit, "Gator Tails and Monkey Ribs," and to introduce their latest release, "There's a Party in the Pad Below."

Admission for each dance is 75 cents per person, with good school clothes as recommended dress.

ARA Commissioner John Hess has issued another appeal for more parental support for club activities. Volunteers have been asked to contact him after working hours at 469-6498.

Teen Club is open to Astro youngsters, 15 through 19 years of age, with applications available at employee services outlets.

ARA Skiers to Meet, Make Weekend Trips

Three items of note appear on ARA Snow Ski Club's agenda for the near future.

First is a trip to Big Bear this weekend (Jan. 22-24) with a fee of \$12 including two nights at Stardust Lodge and four meals. Reservations are handled by Loyal Huddleston, 459-2459, with Bernie Paul, 277-7162, coordinating rider-driver information.

On Feb. 3 the group will hold its monthly business meeting at 7:30 p.m. in ARA Clubhouse.

Then, Feb. 12 a 36-person bus trip to Mammoth is slated. Total weekend cost is \$25 including transportation, two nights lodging, and two breakfasts. Reservations and details are available from Huddleston.

New Facility For Slot Cars Due in Spring

Shift of ARA's popular slot car activity to a new location in the Western Town section of the recreation area is progressing with a spring completion date now anticipated.

Meanwhile, the club continues to operate its track in the ARA picnic pavilion, Monday through Thursday, 7 to 9 p.m., and at other times by special arrangement.

Prospective members are invited to investigate the club's operation by attending the next membership meeting, Jan. 28, 7:30 p.m. in ARA Clubhouse. Similar sessions are held regularly the fourth Thursday of each month.

Details may be obtained from Ed Foland, ARA commissioner, Plant 71 ext. 746, or at 273-2487; Al Werts, club president, 273-6737; Fritz Hunter, vice president, ext. 823 or 276-0708; or Treasurer Rod Hutchinson, ext. 3275 or 746-1539 (Escondido).

The hobby derives its name from slots in roadway over which the miniature, electrically powered cars (1/32 or 1/24-inch scale) operate.

ARA has an 8x38-foot layout, with some 120 feet of track per lap. Tracks have automatic lap counters, and control panels permit simultaneous and independent operation of four cars.

Popularity of the sport may lie in its appeal to all age brackets. According to Foland, adult "drivers" frequently take a drubbing from the "small fry" during club races.

Last Chances Near For Square Dancers

Three chances remain for GD/Astro folk to sign up for what ARA Commissioner Marty Stutz calls "America's greatest entertainment"—square dancing.

Instruction sessions for beginners will be held on three consecutive Tuesdays, Jan. 26, Feb. 2 and Feb. 9 in ARA Clubhouse, 7:30 to 9 p.m. Each class costs 50 cents per person.

In these and subsequent meetings, veteran instructors Dot and Van VanderWalker will take novices from the basic steps through all phases necessary to qualify them for membership in Astro-Nauts, ARA's advanced "do si do" group.

Astro Switchboard Routes Plant 19 Calls

All incoming telephone calls for Air Force Plant 19 are now being routed through the main GD/Astro switchboard at Plant 71. Thus, the old Plant 19 number—297-7111—is no longer in use.

Dialing between plants remains the same. Those at Plant 19 may dial 82-0 to reach the operator or place long distance calls; 82-1421 for telephone information; and 82-1234 for telephone repair service.



OPERATION UNDERBRUSH—Before you mail it, screen your correspondence to see if you've really communicated. Are you conveying precisely the information you wished. If you need an answer, is your request stated to get the right reply, the first time?

Dynamics Women Eligible For Class

A new Edith Antelline course—Business Etiquette and Self Improvement Seminar for Women—opens Feb. 4 for a six week run, meeting from 7 to 9 p.m. each Thursday in the House of Hospitality, Balboa Park.

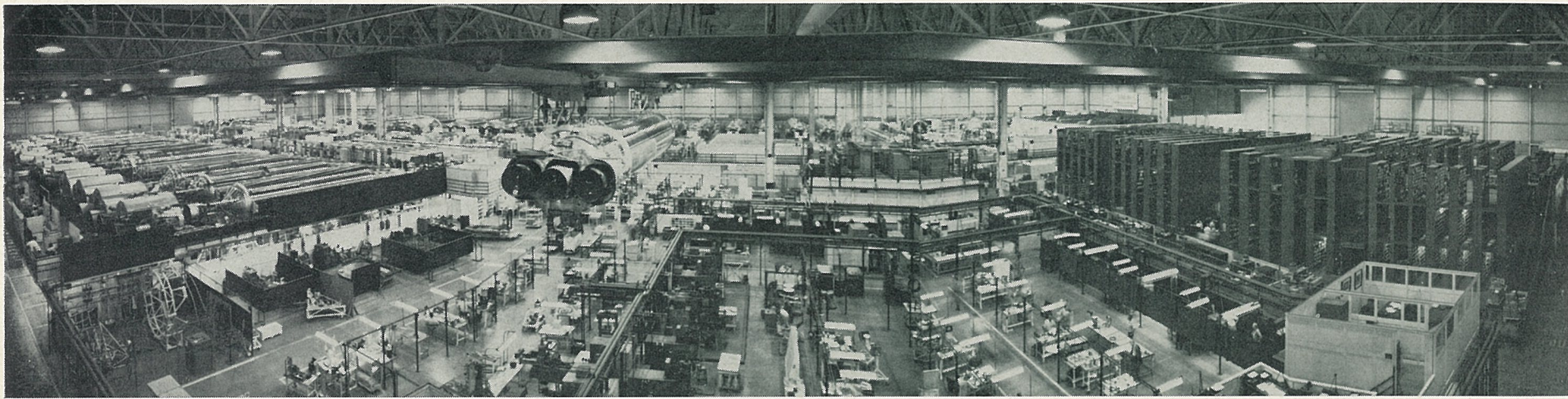
All General Dynamics women and female dependents are eligible to take part in this San Diego Industrial Recreation Council-sponsored event.

Sessions will include instruction in office manners, social etiquette, attractive speech, grooming, correct makeup and hair styling, poise, figure control, wardrobe wisdom and personality development.

The cost is \$13.50 payable to Edith Antelline Russell, 336 Eighth St., Del Mar.

IRC SEEKING MODELS FOR FASHION SHOW

GD/Astro folk—men or women—interested in serving as models in this year's San Diego Industrial Recreation Council fashion show have been invited to contact Bob Barlow, City Park and Recreation Department, at 236-5717.



GIANT SWEEP — Panoramic photo of Astronautics factory is work of Lensman Jack Stevens. View camera was mounted on crane platform on north wall of high bay area and balanced exactly for each of four pictures composing this composite. In 180-degree sweep from left is major assembly area, final assembly and stock

room. In immediate foreground is sub-assembly area. Crane moves Atlas booster for Centaur program from assembly to checkout area. Each exposure was one second at F 11. Four photographs were made, printed and joined, then rephotographed. This is first photo to show entire high bay area in one sweep.

People Mobility

Interdivisional Transfers

(Following are recent personnel transfers among General Dynamics divisions. In parentheses are dates when individuals joined the company.)

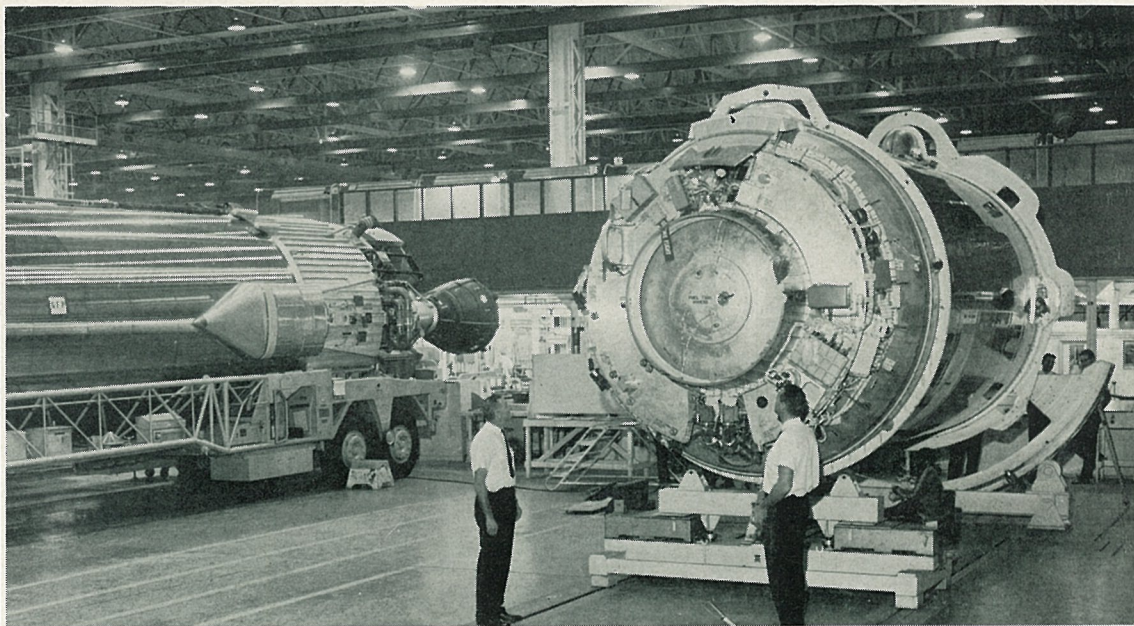
ROBERT W. BERG (1956) from Astro to Convair engineering; **RICHARD D. RUNYAN** (1963) from Stromberg-Carlson-SD to design specialist, GD/Electronics-San Diego; **ARLEN R. EBERHARDT** (1961) from Astro to General Atomic; **NORMAN W. J. MIELKE** (1956) from Astro to Convair engineering; **RICHARD J. EPLER** (1963) from Astro to GD/E-San Diego engineering; **DONALD H. PILE** (1952) from GD/E-San Diego to Convair engineering; **WILLIAM C. LEWIS** (1929) from Stromberg-Carlson, Rochester to GD/E-Rochester contract administration.

HAROLD F. PADDON (1959) from Astro to Convair engineering; **M. BURNS** (1949) from Fort Worth to Electronics-Rochester engineering; **COURTNEY A. SHUCKER** (1957) from Astro to Convair engineering; **ARGYLE O. GIFFORD** (1963) from Astro to Electronics-San Diego engineering; **ROBERT H. KASTILAHN** (1959) from Astro to Convair engineering; **ROY W. THOMPSON** (1963) from Astro to Electronics-San Diego engineering; **EDWARD F. HART** (1961) from Astro to Electric Boat; **WILLIAM D. BRAND** (1959) from Astro to Convair engineering.

MICHAEL SCHWARTZ (1961) from Astro to Electronics-San Diego engineering; **A. COMBS** (1940) from Astro to Electronics-Rochester production control; **PHILIP C. BANDOW** (1964) from Astro to Convair engineering; **RICHARD L. NEILL** (1963) from Astro to Electronics-San Diego engineering; **CLINTON J. FEREDAY** (1963) from Astro to Electric Boat; **JOHN D. KELLY** (1964) from Electronics-Rochester to GD/E-San Diego engineering.

ROBERT V. BIEGERT (1956) from Astro to Convair engineering; **DAVID L. ANDERSON** (1957) from Astro to Electronics-San Diego engineering; **JOHN FRANCY** (1961) from Stromberg-Carlson, Rochester to GD/Electronics-Rochester reliability; **BRIAN B. SPILLANE** (1961) from Astro to General Atomic; **CLAUSS E. THOMAS** (1951) from Astro to Convair engineering; **CEZAR J. BANKS** (1958) from Astro to Electronics-San Diego AIS project office; **GORDON S. VANDERSLICE JR.** (1960) from Astro to Convair engineering.

LEONARD J. FETZER (1963) from Astro to Electric Boat; **E. WILLIAMS** (1960) from Stromberg-Carlson, Rochester to GD/E-Rochester reliability; **WAYNE A. WAGNER** (1962) from Astro to Convair engineering; **DONALD L. HILL** (1951) from Astro to manager of reliability and quality control, AIS project office, GD/E-San Diego; **R. COLEMAN JR.** (1961) from Stromberg-Carlson, Rochester to Electronics-Rochester AN/GLR-1 site operations; **ROBERT G. VANVLIET** (1958) from Astro to Electric Boat.



PARTNERS — Atlas, left, and Centaur launch vehicles come together briefly at Astronautics before each was shipped via air to Cape Kennedy. They will be mated and topped with payload to become Atlas-Centaur Five (AC-5) combination, now slated for launch during first quarter of 1965. Centaur above is in weighing fixture, while Atlas was going through final checkout. AC-5 will be called upon to perform more complex experimental mission than its predecessors, AC-1 through AC-4.

Five Will Present Convocation Papers

Five GD/Astronautics men have been selected to present papers at the Jan. 25-27 Second Aerospace Sciences Meeting and Honors Convocation staged by the American Institute of Aeronautics and Astronautics in New York.

H. J. Thommen, senior staff scientist, and L. D'Attorre, staff scientist, will present their work during the Fluid Dynamics II session Jan. 25. Their paper is entitled "Calculation of Steady, Three-Dimensional Supersonic Flowfields by a Finite Difference Method."

On Jan. 27 at the Structural Mechanics III session, a paper authored by E. E. Spier, design specialist; P. E. Wilson, design specialist; and E. M. Slick, engineer, will be presented. It is entitled "Nonlinear Analysis of Thin Toroidal Shells of Circular Cross Section."

WEBB TO SPEAK ON L.A. PANEL

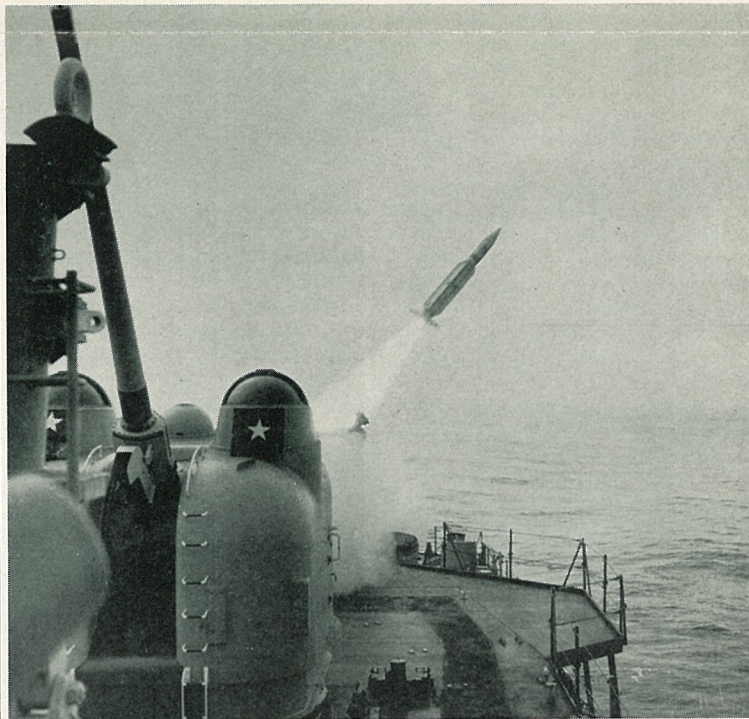
GD/Pomona is one of the firms sponsoring the Sixth Winter Convention on Military Electronics in Los Angeles Feb. 3, 4 and 5.

The opening panel will include James Webb, director of NASA, and Harold Brown, director of defense research and engineering for Department of Defense.

Walter Heller, economic adviser to the President of the United States, will be the banquet speaker. The luncheon speaker is VAdm, Charles B. Martel, director of the Navy's anti-submarine warfare program.

HORNE TO ADDRESS MFG. ASSOCIATION

C. F. Horne, GD/Pomona president, will speak tomorrow (Jan. 21) at the Western Electronic Manufacturing Association conference in Scottsdale, Ariz. He will discuss "Trends in the Electronic Industry."



IN ACTION — In top photo Tartar surface-to-air missile is fired from USS Buchanan (DDG-14) during recent tests. Below, Marine marksman shoulders latest version of Redeye weapon developed at GD/Pomona for Army and Marine Corps. Shoulder-fired missile is designed to give infantrymen defense against low flying aircraft.

When Floods Carry Away Phone Exchange S-C Rushes With Emergency Equipment

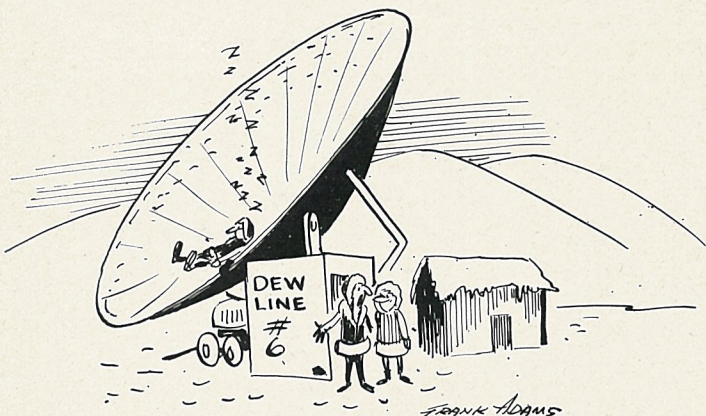
Stromberg-Carlson has come to the aid of a Northern California community hard hit by floods.

Hoopla, Calif., isolated late last month when the Klamath River went over its banks, lost its entire telephone office and communications facilities. The surging river undermined the telephone exchange operated by the Western Telephone Co. Switching equipment fell into the waters.

S-C is shipping a 100-line Compak switchboard to relieve the emergency and make available

service for most residents on a party-line basis. The telephone company expects to house the switchboard in a trailer for the time being.

Work already has begun at S-C on an entire new permanent exchange for Hoopa which will provide 500 lines and service for 700 telephones. It will be produced in record time and delivered within three months. Contract on the new equipment is for more than \$50,000.



"It's a foreign aircraft all right . . . But it doesn't seem to be moving."

Pomona Tops All Divisions to Win '64 Safety Race

Pomona division of General Dynamics has won the Corporation-wide inter-division safety contests, completing 1964 in first place both in the "best record" category and in "most improvement."

Pomona took an early lead and not once relinquished first place during the entire race.

Algie A. Hendrix, vice president-industrial relations, announced that the Corporation as a whole showed substantial improvement in 1964, with accident frequency down 2.7 per cent as compared to 1963 and severity reduced by 25 per cent.

Eight General Dynamics divisions turned in better safety performances during 1964 than their records during the previous three years.

"Also during 1964, seven divisions each worked more than a million man-hours consecutively without a disabling injury. They were Pomona, Astronautics, Fort Worth, Convair, Electronics, General Atomic and Stromberg-Carlson.

"During the period of Feb. 28, 1963, to July 2, 1964, Pomona set a new world aircraft manufacturing safety record by working 21,826,370 injury-free

manhours," Hendrix recalled.

In the "best record" category, Pomona's performance was 0.07 frequency and 10.95 severity. Convair was in second place with 0.58 frequency and 8.42 severity, followed by Electronics (0.65 and 11.85), Fort Worth (0.66 and 22.55) and General Atomic (2.41 and 15.78). Convair's severity mark was the lowest in the Corporation.

In the "most improvement" category, which compared 1964 performance with each division's own previous three-year average, Pomona again was in front, followed by Canadair in second spot, Convair third, General Atomic fourth and Fort Worth fifth. Up until December it was a "horse race" for second place, with Convair challenging Canadair, but the Montreal plant pulled out in front during the last weeks of the year.

Suitable plaques are being prepared for presentation commemorating the 1964 records.

"Although the 1964 record is generally commendable, we expect to make an even more determined effort in 1965," Hendrix concluded.

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ASTRONAUTICS EDITION

GENERAL DYNAMICS NEWS

Vol. 18, No. 3

PUBLISHED BY GENERAL DYNAMICS CORPORATION



Wednesday, February 3, 1965



OPERATION UNDERBRUSH—Modern office techniques and duplicating methods make it easy for paperwork to grow. Too much information is as great a burden—and just as inefficient—as too little. Originators should be certain that everyone on their mailing list has a real "need to know."

Triple Winners Wearing Craftsmanship 'Silver C'

A modest but highly coveted silver lapel ornament was presented to each of 36 GD/Astronautics employees at Vandenberg AFB last month as their symbols of membership in one of the division's most exclusive groups.

The device—a representation in sterling of the Do Good Work program's Craftsmanship insignia—is worn only by members of departments who have captured the Craftsmanship award for three consecutive months.

The men and women of material control (Dept. 576-3-5) were VAFB's Craftsmen of the Month for October, November and December. This record has been equalled by only one other depart-

ment, MAB-5 also at Vandenberg, which won the coveted "Silver C" award after leading monthly contests for April, May and June.

To date, a total of only 92 of the emblems has been presented.

"Repeat winners" among participating departments are rare, since the competition's scoring formula includes monthly comparison with a quality base which moves, month by month. Because of this, a unit must constantly better its performance simply to repeat a Quality Index achieved earlier.

On hand at Vandenberg for presentation ceremonies was

(Continued on Page 2)

All Facilities Cutting Down On Paperwork

"Underbrush Fever" seems to be contagious, with symptoms—emptier file cabinets, fewer reports, more effective communications—prevalent with GD/Astronautics folk everywhere.

Operation Underbrush, the division-wide effort to eliminate unnecessary paperwork, has met success on several fronts as employees in San Diego, at Western Test Range and Cape Kennedy tackled the "paperwork jungle" and came up with new ideas to keep it clipped to the roots.

"Clean out the files" weeks at all sites brought impressive results.

In San Diego, over 337 tons of unneeded paperwork were weeded out, along with a heavy volume of salvageable office materials. Operations at WTR cleared away five tons of paper—then immediately retired 20 five-drawer file cabinets from service as superfluous. This WTR effort dealt heavily in eliminating unnecessary forms and reference documents which alone accounted for 355,200 sheets of paper.

Suggestion review and evaluation section of GD/Astro's management systems has reported a "boom" in ES/CIP submittals, as salaried personnel as well as hourly employees were offered a chance at cash awards for Operation Underbrush suggestions.

In the three-week period ending Jan. 25, employees turned in 381 ESs and CIPs, 226 of them (59 per cent) dealing with Underbrush. Total submittals were up 40 per cent over the 1964 average!

More Cash Awards For ESs Offered

Sparked by response to cash awards offered salaried employees for Operation Underbrush suggestions during January, a revised Employee Suggestion program plus a new bonus award for paperwork-reducing ideas has been announced at GD/Astronautics.

Suggestions received and approved on and after Monday (Feb. 1), whether from hourly or salaried employees (except supervision), will earn cash awards amounting to 10 per cent of their first year's net savings. The maximum award for a single approved suggestion is \$5,000.

Emphasis on Operation Underbrush continues in the form of a special bonus award for which hourly and salaried employees alike are eligible.

The first 150 suggestions for eliminating unnecessary paperwork, received and approved after Feb. 1, will earn each submitter a cigarette lighter in addition to any cash award for which he may be eligible. The slim pocket lighters are finished in brushed aluminum, engraved with "GD/A" and the words, "Operation Underbrush Award."

All employees, hourly and salaried (non-supervisory), will now submit their ideas as Employee Suggestions. Ground rules of the revised program are formally detailed in Standard Practice 2-18, Issue 5. Suggestion boxes in which completed ES forms should be deposited are located throughout company facilities, with a

supply of forms available at each.

Supervisors have been urged to submit their dollar-saving proposals as Cost Reduction Projects for processing within the framework of GD/Astro's cost reduction and value control program.

Members of GD/Astro Management Club are provided further incentive to put their constructive ideas to work through the club's Man-of-the-Month award. This citation for the club member making the most significant contributions to the division's suggestion program each month earns the recipient an engraved plaque plus formal recognition at a Management Club meeting.

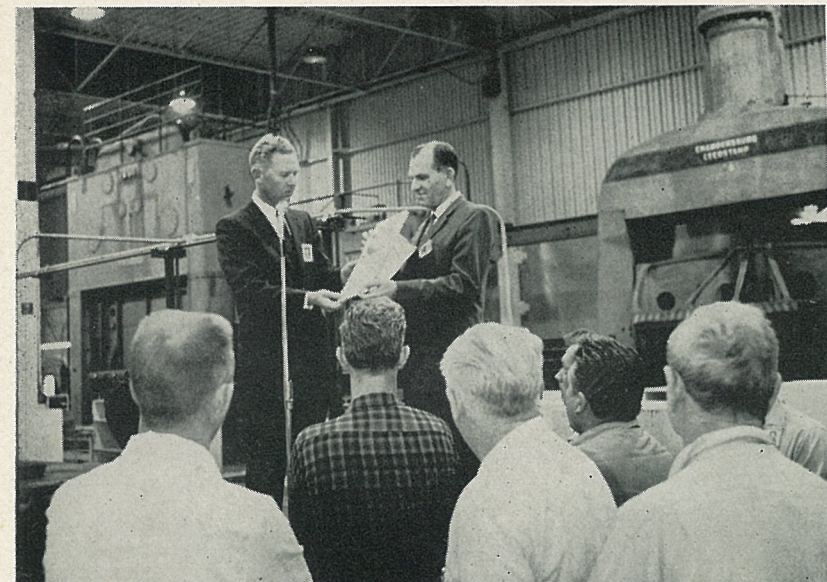
Presentation of Man-of-the-Month awards for November through February plus the 1964 President's Award are presently scheduled at the club's March meeting.

GD/Astro's Employee Suggestion program is administered by the suggestion review and evaluation section of management systems department under Director J. H. Johnson, and Donald R. Pardee, manager of division system's (Dept. 170-0).

Bauman to Chair NMA Committee

Ralph T. Bauman, Dept. 756-0, president of GD/Astro Management Club for 1963-64, has been named chairman of National Management Association's membership promotion committee for 1965. He will head membership activities on a national scale during the coming year.

Bauman is a general foreman.

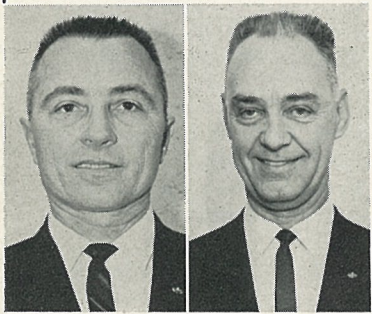


KUDOS—At left, President J. R. Dempsey presents December Craftsmanship plaque to Merle Goodhart for Dept. 732 (sheet metal) employees in brief ceremony which marked first full year of operation of formal Do Good Work program at GD/Astro. Winning department achieved Quality Index of 110. At right, with



Frank Robbins, GD/Astro material operations manager on speaker's platform, employees of Dept. 576-3-5 at Vandenberg AFB are pictured moments before being individually presented with coveted "Silver C" awards for winning Craftsmanship competition for three consecutive months.

Log Book Entries



Two who recently received 25-year service emblems are, left, Jack R. Horner, Dept. 971-5 and J. R. Shuter, Dept. 641-1.



Frank S. Webster, Dept. 250-1, recently received his 30-year emblem from President J. R. Dempsey.

Papers Presented

ASTRONAUTICS

CHIARAPPA—D. J., Dept. 556-0. "An Analysis of the Vertistat Gravity Gradient Satellite Orientation," submitted to Journal of Spacecraft and Rockets.

EHRIKKE—Kraft, Dept. 503-0. "Review of Early Manned Planetary Missions," published in USN Research Reserve Proceedings (West Coast).

FAGGER—J. A., Dept. 693-1. "Integrated Non-Re-entry Manned Spacecraft Hull Design," AIAA/NASA Manned Space Flight meeting, Houston, Texas, Nov. 4-6.

GEISERT—R. E., Dept. 592-1. "Stainless Steel Tubing Corrosion in a Sea Coast Atmosphere," Symposium for Shock, Vibration and Associated Environments, Oct. 13-15.

KING—C. D., Dept. 262-4. "An Advanced Life Support System for Space Flights of Long Duration," Michigan State University, East Lansing, Mich., Oct. 26.

MARKS—L., with E. P. CORMIER, N. TAROWSKY, all Dept. 558-5. "FLAT-PAK, a Planar Welded Module Packaging Technique," SAE Welded Electronics Packaging Conference, New York City, Oct. 28.

NICHOLAS—H. B., Dept. 558-5. "A Stripped Down Approach to the Missileborne Electronic Package," submitted to Electronic Packaging and Production Journal.

ROEHRS—C. S., Dept. 567-3. "Vibration Fixture Design and Combined Cryogenic Environments for the Centaur Space Vehicle," Institute of Environmental Sciences, Nov. 15.

TURNERY—R. L., Dept. 512-3. "Free-Free Bending Vibration Measurements of the OAO Boost Vehicle Utilizing Air Bearing Support," Symposium for Shock, Vibration and Associated Environments, Oct. 13-15.

YOSHIFARA—Hideo, and H. THOMMEN, both Dept. 596-0. "Magnetic Dipole Induced Plasma Motions," submitted to Physics of Plasmas.

The following presented papers at the AIAA Aerospace Sciences Meeting, New York, Jan. 25-27:

NEU—J. T., and W.M. BRANDENBERG, both Dept. 596-0. "The Unidirectional Reflectance of Imperfectly Diffuse Samples."

SPIER—E. E. Jr., P. E. WILSON, both Dept. 557-1, E. M. SLICK. "Non-linear Analysis of Thin Toroidal Shells of Circular Cross Section."

Retirements

BERTACCHI—P. G., Dept. 975-3. Seniority date May 7, 1956. Retired Jan. 27.

CAMPORINI—Mrs. Olive, Dept. 834-1. Seniority date Oct. 10, 1956. Retired Dec. 11, 1964.

GRAHAM—George, Dept. 403-3. Seniority date Jan. 27, 1957. Retired Nov. 4, 1964.

HARRISON—J. P., Dept. 331-4. Seniority date Sept. 16, 1956. Retired Dec. 11, 1964.

HOUSTON—Paul A., Dept. 461-0. Seniority date April 17, 1959. Retired Jan. 8.

JONAS—Christine, Dept. 832-2. Seniority date Sept. 6, 1956. Retired Dec. 23, 1964.

LORT—F. W., Dept. 835-4. Seniority date Feb. 13, 1959. Retired Dec. 15, 1964.

MADSON—M. C., Dept. 318-0. Seniority date April 26, 1951. Retired Jan. 1.

MANOR—Earl L., Dept. 961-4. Seniority date March 16, 1951. Retired Dec. 30, 1964.

RYAN—Harold T., Dept. 524-4. Seniority date Feb. 6, 1957. Retired Jan. 4.

SHELTON—Mrs. M. D., Dept. 975-5. Seniority date July 5, 1956. Retired Nov. 1, 1964.

SIMS—H. W., Dept. 405-2. Seniority date April 23, 1953. Retired Jan. 1.

General Dynamics NEWS

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Invention Disclosures

ASTRONAUTICS

McMURRAY—J. J., Dept. 988-2. Hand-powered Underwater Communicator.

TRANSUE—J. R., Dept. 261-6. Linear Motor.

WIEDER—H., Dept. 979-0. Formed Adhesive Seal Strips.

WRENCH—E. H., Dept. 506-1. Fast Response Valve. Also, Non-volatile Bistable Fluid Elements.

In-Plant Training

ORIENTATION

NEW EMPLOYEES—Educational services staff, ext. 1931. Three hours, Monday, March 1, 8-11 a.m., Room 6, Bldg. 17, Plant 71.

PROFESSIONAL/TECHNICAL

RELIABLE ELECTRICAL CONNECTIONS—Educational services staff, ext. 1931. Forty hours; runs weekly 7 a.m. to 3:45 p.m., Room 4, Bldg. 17, Plant 71.

PRODUCT IMPROVEMENT—Educational services staff, ext. 1931. Closed registration, Four hours daily.

AFTER HOURS TRAINING IN-PLANT CITY COLLEGE COURSES

APPLICATION FOR ADMISSION—Forms now available from educational services, Bldg. 33, Col. E-5, must be completed by all students, new and returning.

COURSES OFFERED—Electronics 75 (Digital Computers), Math 17a, Math 17b, Math 19 (Calculus for Electronics), Business Management I & II, Technical Writing III, Quality Control I, II & III. For more information call Dick Forrest or Laura McGraw, educational services, ext. 1931, Plant 71.

OTHER INSTITUTIONS

CATALOGUES & SCHEDULES—For information about the following institutions, call educational services, ext. 1931: Cal-Western, Grossmont, Mesa, Palomar, SD Adult Evening, SD State, Southwestern, University of SD, US Extension, UC San Diego.

Personals

We wish to express our heartfelt thanks to our GD/Astro friends for the expressions of sympathy and the help they offered in the recent loss of our husband and father.

The Ivan Bjorkman family.

Lost & Found

FOUND—Silver money clip, found in Board Room at New York Headquarters. Inquire at any GD/NEWS office.

Births

GARRETT—Son, Thomas Christopher, 5 lbs., 13 oz., born Nov. 20, 1964, to Mr. and Mrs. Thomas A. Garrett, Dept. 524-3.

ORYSIEK—Son, Edward, 9 lbs., 3 oz., born Nov. 19, 1964, to Mr. and Mrs. Leonard Orysiek, Dept. 142-4.

SWEET—Daughter, Renee, 7 lbs., 13 oz., born Sept. 28, 1964, to Mr. and Mrs. Edward G. Sweet, Dept. 142-4.

VALDEZ—Son, Vicente Tomas, 8 lbs., 4 oz., born Dec. 21, 1964, to Mr. and Mrs. Onofre Valdez, Dept. 761-0.

BLOODMOBILE VISIT SCHEDULED FEB. 25

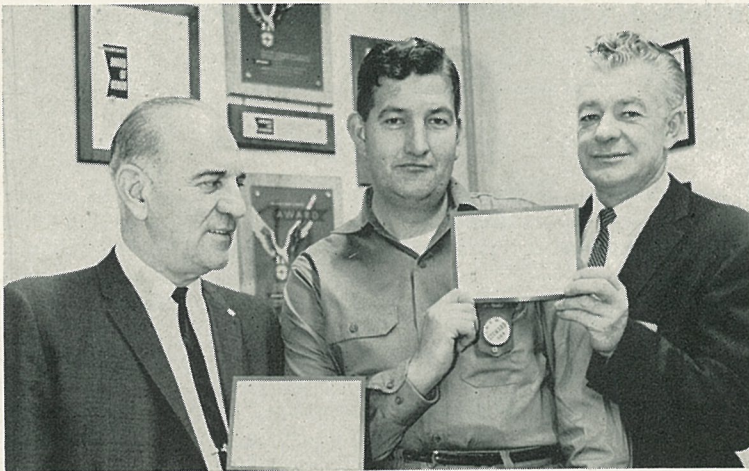
Solicitation of donors will begin soon among first shift operations department employees at GD/Astro in preparation for the visit of San Diego Bloodmobile Feb. 25.

At present, only 60 pints of blood remain credited to GD/Astro with San Diego Blood Bank, and donors are critically needed to increase this supply.

The blood bank program makes it possible for any GD/Astro employee or dependent to receive blood free of charge (except for a processing fee normally covered by group insurance), up to five pints per person per year.

To maintain a supply, employees are solicited periodically by department. Operations personnel were last asked to donate in December, 1963, at which time they gave 191 pints of blood.

When telephoning, never mind the weather. Get to the point. Telephone time costs money.



CHARTER MEMBERS—Dave Haslanger, left, and Jay Wages display membership plaques of Wise Owl Club, presented them recently by Jack Garrison, right, Astronautics' chief safety engineer. Two were first Astro employees to earn membership in national organization comprised exclusively of those whose sight has been saved through wearing safety glasses.

Two, Saved by Safety Glasses, Accepted For 'Wise Owl Club'

Two GD/Astronautics employees recently became the first from the division to receive membership in a highly exclusive group—the Wise Owl Club of America.

Dropped Decimal Pt. Fogs Up Fog Index

Fogged by your Fog Index? Probably, if you followed foggy instructions given in GD/NEWS, Jan. 20, for finding the readability level of your writing.

Want to try again? As before, find the average number of words per sentence, and add this to the percentage of words with three or more syllables. Now, multiply this by four-tenths (0.4) and NOT 4, as recommended Jan. 20.

Get the "point" this time? The result is roughly the number of years' education a reader needs to readily understand your writing.

HODGE TO TEACH UC ART COURSE

S. B. Hodge, GD/Astro manager of art direction, will serve as a member of the teaching staff for classes scheduled by University of California Extension in its studios at La Jolla Museum of Art this spring. The Extension offers a total of 27 art classes this term.

Ames Graduation Speaker For First Of Six Value Engineer Seminars

The first of six Value Engineering seminars slated at GD/Astronautics during 1965 was completed last month with C. S. Ames, vice president and program director—SLV, as "graduation" speaker.

Instructors Everett Lindem and Harold Sicard of educational services (Dept. 130-3) guided 39 participants through the program which met over a two-week period in ARA Clubhouse.

As in the past, teams devoted their attention to actual hardware projects, carefully selected both for their instructional value and for potential savings.

Seminar 1-65 was "audited" during its opening session by 11 management representatives of Rohr Corp. who familiarized

themselves with GD/Astro's approach to VE instruction preparatory to instituting a training program at their own firm.

Teams and their projects were:

Team #1—Pressure Tank Gimbaling Duct Assembly (submitted by George Webber, operations). R. L. Cox, Dept. 663-4; E. S. Edwards, Dept. 420-3; J. Frazier, Dept. 556-6; A. E. Munson, Dept. 662-0. Project leader, A. E. Williams, Dept. 403-3.

Team #2—Telemetering Diplex Antenna Coupler (submitted by Webber, operations). C. T. Boyle, Dept. 420-6; J. J. Doering, Dept. 370-1; W. A. Eaton, Dept. 655-5; G. S. Fletcher, Dept. 549-9; J. H. Walker, Dept. 880-4. Project leader, Williams.

Team #3—Autopilot Relay Bracket (submitted by Webber, operations). E. F. Gribbin, Dept. 373-1; J. Martinez, AFPRO; D. A. Rau, Dept. 504-3; L. L. Richardson, Dept. 451-0; J. E. Scott, Dept. 360-1. Project leader, G. Mouritzen, Dept. 528-2.

Team #4—Cabinet Unit for GLOTRAC Transponder Checkout Set (submitted by Saul Lepen, engineering). R. F. Kalal,

Triple Winners Wear 'Silver C'

(Continued from Page 1)

Frank Robbins, GD/Astro's manager of material operations, who presented letters of commendation from President J. R. Dempsey and the pins to E. A. Millar, VAFB manager of support operations.

Assisted by Operations Director D. L. Fagan, C. D. Wirt, chief of material services, distributed the awards to Dept. 576-3-5 employees as Supervisors Bob Dougherty (material records), Hank Massry (material stores), George Dahle (traffic) and Bob Chrvia (second shift operations) looked on.

In San Diego, a new department was winner of December honors.

President Dempsey presented the Craftsmanship plaque to Merle Goodhart for Dept. 732 (sheet metal) employees who achieved a Quality Index of 110.0 for the month. Production electronics (Dept. 780-1), winner of November's award, was in second place with a QI of 108.4, while close behind ranked Dept. 715 (machine shop—Plant 19), and Dept. 780-3 (test equipment manufacturing) who tied at 108.1.

At Cape Kennedy, personnel of Complex 13/14 earned Craftsmen of the Month laurels with a QI of 103.3.

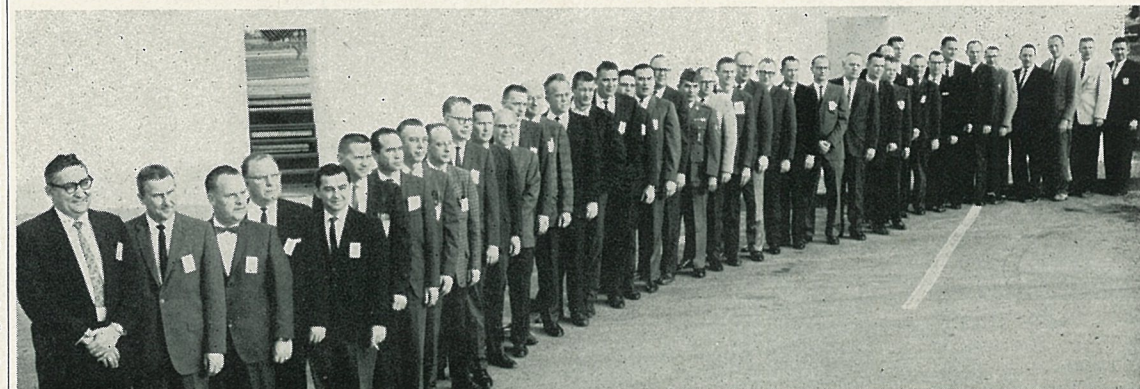
A look at GD/Astro's Zero Defects-type program in its first full year of operation shows 61.5 per cent improvement in defect ratios since "Do Good Work" was adopted as the division's operating by-word.

Dempsey to Address Economic Conference

J. R. Dempsey, president of GD/Astronautics, will be a key speaker during the annual Business Outlook Conference sponsored by the Economic Research Bureau of the San Diego Chamber of Commerce, Feb. 5, at El Cortez Hotel.

His topic will be "Aerospace Programs and Their Effect on San Diego."

Another General Dynamics man, Dr. Park H. Miller Jr., assistant director of the laboratory at General Atomic, will be a member of the panel on "The Future of Research and Development Activities in San Diego County."



VALUE LINE—This group, pictured with instructors Everett Lindem and Hal Sicard, has joined the growing ranks of Value Engineering seminar graduates at GD/Astro, as members of first of six scheduled workshop-type classes to be held during 1965. Thirty-nine class members represented nine major departments plus AF Plant Representative Office.

Microfilm Parts Catalogue Technique Offers Big Saving

A Convair technical publications study has uncovered an up-to-date and modern means of providing illustrated parts information for commercial and military customers which may, in the future, replace the conventional printed catalogues.

"We have been searching for many years for a method of printing illustrated parts catalogues that will benefit our customers and save money for Convair," explained Howard R. Kennedy, manager of technical publications. "After intensive study and experimentation we now feel that we have found a method which would revolutionize our entire technique."

The new method, now under evaluation for future use, is a new application of the Recordak viewer using multiple film clips,

or cards, instead of conventional roll film, with an adapter for rapid searching.

The microfilm card system was selected over several other methods during a recent value analysis study as the most efficient and least expensive means of providing the vast amount of necessary information on parts.

Technical publications department found that the entire Convair 880 illustrated parts catalogue (5,000 pages) could be compressed onto 96 Recordak film cards. Preparation cost of 100 sets—the average number used by an 880 customer airline—would be \$3,093, just a third of the \$15,200 it costs to print the five-volume sets now in use.

In addition, shipping costs would take a drastic nose dive with the lightweight film cards. Film cards could be shipped in envelopes instead of cartons at five per cent of the cost. A hundred sets of a complete 880 illustrated parts catalogue on film cards would weigh 90 lbs. as opposed to the nearly two-ton (3,840 lbs.) weight of the same number of printed catalogues!

Other advantages of the film card system are: rapid filing of revision material—an average revision of 865 pages would take two or three hours to insert in the printed volumes, minutes in the film card file; untold saving in storage space with a microfilm catalogue taking up only 100 linear inches versus 1,450 inches needed for the printed catalogues; and ease of locating required part numbers in a small compact file.

TWA Converts First of 880s

A crew of Convair engineers and factory specialists now are based at Trans World Airlines' Overhaul and Repair Base, Kansas City, Mo., to provide technical support during conversion of Convair 880 No. 1, first of the 880 jet transport series, recently acquired by TWA.

During the next six months as many as eight Convair men will be assigned to the program as the 880 is transformed from a flight test craft to actual passenger configuration in conformance to Federal Aviation Agency type certification, said E. F. Kotnik, in charge of Convair's 880/990 project office.

Presently stationed at the TWA base at Kansas City's Mid-Continent International Airport are G. C. Kincaid, engineer; G. W. Just, FAA designee representing both Convair and FAA; Frank Lynn, tool planner; George Armstrong, factory specialist; and Alex Rinaldi, logistics provisioning representative. L. J. Hayes of Convair service parts is responsible for contract administration.

A former Convair field service representative, Ed Buchman, now with TWA, is acting as the airline's project engineer during the conversion program.

'Gen. Dynamics U.S.A.' Address Sufficient

With or without ZIP codes, the "speedy messengers" of the Post Office Department have again "completed their appointed rounds" with efficiency bordering on clairvoyance.

W. E. Magnuson, chairman of the control board for GD/Astronautics' Zero Defects-type "Do Good Work" program, recently received correspondence from an Australian firm. The letter asked for details on the division's motivational effort which had been mentioned favorably in Time (International).

The letter reached its goal in San Diego bearing an address which read simply, "General Dynamics Limited, U.S.A."

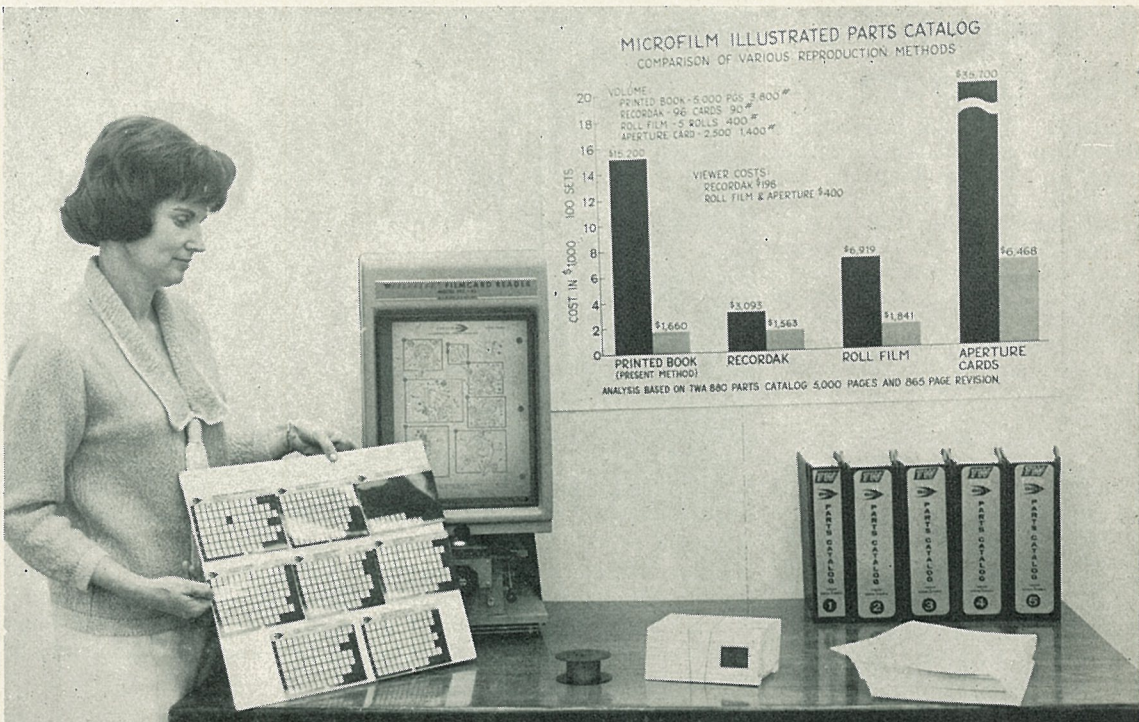
Famme Will Serve As SAE Director

J. H. Famme, president of GD/Convair division, has been elected to a three-year term on the board of directors of the Society of Automotive Engineers. He attended the first meeting of the new board Jan. 15 at the national SAE conference in Detroit, Mich.

Famme has been a member of the technical organization for over 20 years. He has served as vice chairman and chairman of the San Diego Section, SAE, and as chairman for the group's annual Manufacturing and Engineering Forum in Los Angeles, Calif., as well as a member of numerous SAE aerospace committees.

SONAR CONTRACT AWARDED GD/E

The U. S. Navy's Bureau of Ships has announced award of a cost-plus-fixed-fee contract to GD/Electronics for a development program to demonstrate feasibility and potential of an advanced type of sonar system. The contract amounts to \$1,682,101.



MINIATURIZED CATALOGUES — Hazel Ferguson of Convair technical publications, displays new microfilm card system under study for reproduction of illustrated parts catalogues. Film cards she holds contain same amount of material as pile of printed sheets, roll of film, and stack of aperture cards on table.

New Computer System Is Faster And Will Save \$60,000 a Month

A new computer system offering improved service for scientists and engineers, as well as significant savings for the division, was placed in service last month at GD/Astronautics.

The relatively compact IBM 7094 II/7044 Direct Couple System is installed in the windowed digital computer lab in Bldg. 4, Plant 71 at San Diego where it is operated by employees reporting to A. E. Andress, manager of data processing operations; G. R. Jacob, chief of machine operations; and G. L. Davis, scientific operations supervisor.

The system replaces one IBM 7090, an IBM 7094, and five IBM 1401s. Although it will do all that was done by the earlier systems—and more—the newly-acquired 7094 II/7044 will produce savings of nearly \$60,000 per month in rental costs alone.

A simplified "before and after" look at lab procedures illustrates several advantages of the new Direct Couple System in which two individually powerful computers (the 7094 II and 7044), together with 12 magnetic tape units, a card reader, card punch, and three high speed printers are interconnected to form a single computing complex.

GD/Astro engineers and scientists submit problems originating in their work to the computer lab, pre-programmed in an algebraic computer language such as FORTRAN.

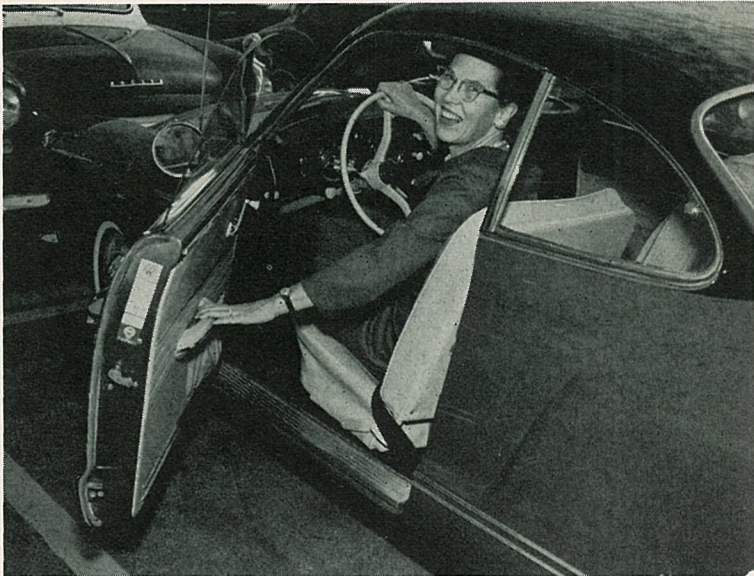
The lab performs the specified computations and returns the results. After these results are evaluated, the program may be modified and resubmitted several times. This "repeat business" emphasizes the need for a minimum "turn-around"—the time required to process and return each job.

"Before" involved a number of manual operations. Jobs—usually a stack of punched program cards—came to the lab and were logged in; the cards were run through a 1401 which transferred the program to magnetic tape. Tape was sequenced into either the 7090 or 7094 computer as schedule and priority permitted. Results were printed on a separate 1401, and returned to the submitter with the original program.

"After" is easier.

Cards which comprise incoming jobs are fed into a reader. From there on, operation becomes almost fully automatic. The 7044 operates under control of a supervisory program, simultaneously accepting new jobs through the card reader, processing previously submitted jobs on the 7094 II for computations, and printing the results for up to three jobs that have passed through the computing stage.

Computer specialists call this "automating the machine room." In practical terms, it means that



HONORED — Rebecca H. Sparling, GD/Pomona materials specialist, has been named "Woman Engineer of the Year" by Los Angeles Metropolitan Engineers' Week Committee. She will receive award during Engineers' Week Feb. 22-26. Mrs. Sparling has been with company since 1951. She commutes between Pomona and her home in Apple Valley.



FOR PROGRESS—Astronautics' new Direct Couple System is in operation in Astro's digital computer lab. Photos, from left: Janice Calabrese and Judy Rozhon, Dept. 101-1, admire high speed printers; George Jacob, chief of machine operations, and C. E. Reid, Dept. 595-0, were instrumental in installation; key point is monitored by J. E. Meyer as Ted Medin checks printer; R. N. Wergen, analyst, and G. L. Davis, scientific operations supervisor, check tape units.

QC Members to Hold Dinner Conference

General Dynamics members of San Diego Section, American Society for Quality Control, may get their tickets now from in-plant boosters for the Feb. 8 dinner meeting at the Bronze Room and Restaurant, La Mesa.

John Di Cicco, manager of methods and operations analysis for Chrysler Corp. car and truck assembly group, Detroit, Mich., will speak on "Dynamic Quality Control."

Social hour is at 6 p.m., followed by dinner at 6:30 and the program at 8. Dinner price is \$2.50, including tax and tip.

Reservations may be made through L. C. Stuckey, Convair Plant 1, ext. 646; Paul Gelles, Astro Plant 71, ext. 4505; R. F. Frederick, Astro Plant 19, ext. 509; Ivan Kemper, Stromberg-Carlson Plant 2, ext. 36; J. A. Lederer, GD/Electronics Plant 1, ext. 1476.

Mgt. Clubs of Area Meeting Next Week

Management Club members of General Dynamics groups at Astronautics, Convair, GD/Electronics, Stromberg-Carlson are urged to get tickets for themselves and their ladies as soon as possible for the San Diego Area Council night Feb. 8 in the new Convention Center.

Tickets must be purchased in-plant at usual outlet locations as no tickets will be sold at the door.

Social hour starts at 6 p.m.; dinner at 7; program at 8.

Featured speaker will be Ronald Reagan. Annual NMA award will be presented to the top management man of the year.

Textbooks Requested For School Library

An appeal for donation of textbooks to the Glen Rocky Camp School library was made this week to GD/Pomona employees who are completing fall semester courses.

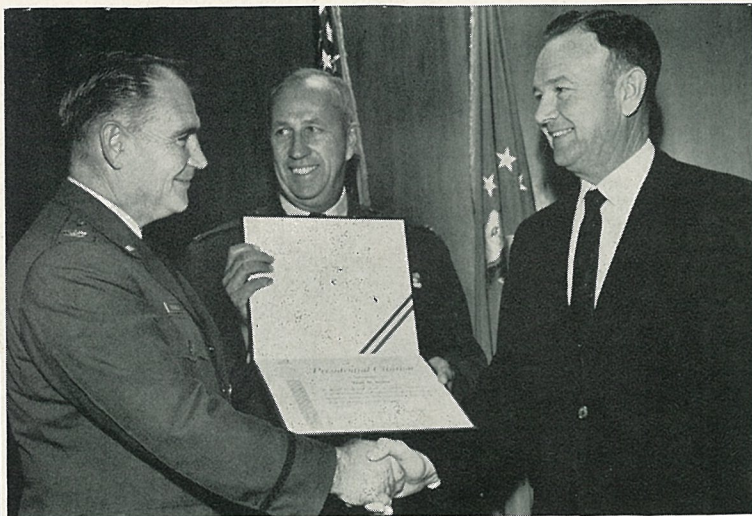
J. R. Chapman, chairman of the GD/Pomona Management Club's community service committee, made the appeal for the camp school for boys 16-18 years old who are juvenile wards of the courts.

Books may be placed in containers at plant gates or prospective donors may contact Chapman at ext. 6220.

Harwood Appointed Astro NEWS Editor

Willard (Bill) Harwood has been named Astronautics division editor of GD/NEWS, succeeding Bryan Weickersheimer who has left the division to join Northrop Corp.

Harwood, a 1954 graduate of the University of Iowa, and a former Naval Reserve officer, joined the Astronautics GD/NEWS staff five years ago.



WHITE HOUSE CITATION—Col. Fred L. Rennels Jr., WCMR commander, left, congratulates Floyd W. Duffey of AFPRO at GD/Astronautics, after presenting him with Presidential Citation for Recognition of Significant Economy. Col. Malcolm K. Andresen, AF Plant Representative, holds citation signed by President and Secretary of the Air Force.

AF's Floyd W. Duffey Receives Special Presidential Citation

Presentation last month of a citation from the President of the United States marked still another chapter in the story of a money-saving suggestion and the man who implemented it.

Last year, Floyd W. Duffey of the quality assurance division, Air Force Plant Representative's Office at GD/Astronautics, received a \$1,300 cash award for a suggestion made under the USAF Incentive Awards Program (GD/NEWS, July 29, 1964).

His proposal called for changes in the SLV booster engine testing procedures, and was credited with first-year savings to the government of \$168,000.

Duffey's award was one of the largest to be made locally in the incentive program.

It became still more news-

worthy when he turned the funds over to his favorite charity, Christian Hacienda Orphanage in Tijuana, where it was used to erect a girls' dormitory for some of the 100 or more destitute children who are cared for there.

Then last month Duffey, accompanied by Col. Malcolm K. Andresen, AF Plant Representative, went to Los Angeles Air Force Station where Col. Fred L. Rennels Jr., commander of the USAF Western Contract Management Region, bestowed the latest honor upon him.

Duffey was presented with a personal Presidential Citation for Recognition of Significant Economy signed by President Johnson and Eugene M. Zuckert, Secretary of the Air Force.

Dropout Problem Hit By Mgt. Club Project

What do you say to a boy who thinks he's born to lose?

Somehow, two GD/Astronautics men found the answer recently, and communicated it.

In the pilot effort of a program sponsored by GD/Astro Management Club and designed to combat at the local level the growing national problem of the school dropout, A. J. Woodington, standards and calibration labs manager, and J. L. Beck, Dept. 405-1 manufacturing engineer, appeared before 40 students at Memorial Junior High School in San Diego.

Principal Frank Thornton and Tom Hurtle, boys' counselor, saw to it that their audience was a select group. The ninth graders had a good deal in common. All were "bright"—IQs ranging from 105 to 140. All showed promise for professional success.

And, all were potential dropouts.

Don McMurtrey, Dept. 405, chairman of the Management Club committee coordinating the anti-dropout effort, said, "We were told that these youngsters, possibly because of their backgrounds and environment, seem to have a 'can't win' attitude. They feel that 'anyone' can do 'anything' better than they can."

The GD/Astro men had one hour. There was no sermonizing. Woodington offered plain talk. In his profession, he stated, any job takes a high school diploma; most call for at least one college degree.

Beck told a story about a dropout who "got wise"; who went back to school much later for one degree, still later for another. He demonstrated what an education can mean. "You see," he explained, "the dropout was me."

It took just about ten minutes, McMurtrey said, to change apathy to interest. At that point the GD/Astro men stopped talking to answer as simply and as honestly as they could, a barrage of questions from the floor.

The picture was painted no rosier than it was. A student asked what a college degree could do for someone with no experience. Woodington walked to a door and opened it. "Just that," he said. "The rest is up to you."

When the session ended, Counselor Hurtle told the men, "You just can't know what it has meant for you to come here."

Principal Thornton said, "You gentlemen can be very proud of your accomplishment here today. You gave them hope—a reason to believe their efforts can be rewarded."

For a few moments, Woodington and Beck had made contact with another generation. Whether or not their message is taken to heart remains to be seen. But they hope for the best.

As the Management Club team was leaving, the men were stopped by a half-dozen students.

"Thank you, sirs," the kids said.

Travelers to Speak Before Garden Club

Two-time round-the-world travelers Alma and Otto Ketelsen will give an illustrated report on visits to exotic corners of Egypt at the meeting of General Dynamics Garden Club, 7:30 p.m. today (Feb. 3) in Balboa Park's Floral Association Bldg.

All San Diego area GD employees have been invited to attend by Commissioners Everett Henderson (ARA) and Gene Zimmerman (CRA).

The club's new president, Danny Blum, GD/Convair (ret.), has begun an active recruiting campaign among retired GD employees, and has assured warm welcome at club activities for those with gardening interests.

In other club news, a 25 per cent discount on roses has been arranged for members through a local nursery. The group's annual Rose Show date has been set for April 11, significant for growers who must prune their plants now to encourage blooms at that time.

Mgt. Club to Offer Four Scholarships

Four scholarships will be offered again this year by GD/Astronautics Management Club.

At stake is one grant of \$800, one for \$400, and two of \$100 each.

Application forms and detailed ground rules governing the scholarship contest are available from area high school principals' offices, or from Cy Campbell, Dept. 652-5, Management Club scholarship chairman, ext. 2493, Plant 71.

Eligible to apply are sons or daughters of GD/Astro employees, on the payroll on or after Sept. 1, 1964, and who expect to complete high school this June. Applications must be submitted by Feb. 22.

Winners will be selected on the basis of scholastic ability and achievement.

Health Club Opens New Gym Classes

General Dynamics folk have been invited to join a completely new activity now under way in conjunction with ARA Health Club.

Frank Echevarria, club director, is conducting a series of gymnastics classes for men, women and children of all ages. Instruction and use of equipment during weekly meetings, over a six months period, costs \$6 for the first family member who signs, with additional members of the same family enrolled for \$3 each.

A children's beginning class now meets from 10 a.m. until noon Saturdays. Other sessions also on Saturday will be scheduled as interest warrants.

Details are available from Echevarria, plant 71, ext. 1111.

CAPITAL CONFERENCE

A Convair wife, Mrs. Raymond E. Smith (husband in Dept. 15), will represent San Diego at the National Cleanest Town conference in Washington, D. C., next week (Feb. 8-9). Mrs. Smith is president of City Beautiful of San Diego, non-profit corporation established for residents interested in improving San Diego.

Schedule Set For Business Mgt. Courses

Schedule of second-semester Business Systems Management courses starting at Astro and Convair plants next week in cooperation with the University of California Extension is:

Data Processing and Computer Programming—Tuesdays, 5-7:30 p.m., Astro Plant 71, Bldg. 17, Room 7. Instructor, G. E. Myers, Astro senior programmer. First session Feb. 9.

Management Information Systems—Mondays, 5-7:30 p.m., Convair Plant 1, Bldg. 14, Room 8. Instructor, C. K. Twohey, Convair systems and procedures analyst. First session Feb. 8.

EDP Economics and Feasibility Studies—Wednesdays, 5-7:30 p.m., Astro Plant 71, Bldg. 17, Room 8. Instructor, M. J. Dasenczo, Astro senior research engineer. First session Feb. 10.

Data Processing with Unit Record Systems—Thursdays, 5-7:30 p.m., Astro Plant 71, Bldg. 17, Room 7. Instructor, J. W. Spillman, Astro data processing supervisor. First session Feb. 11.

Oral Communication for Business Management—Wednesdays, 5-7:30 p.m., Astro Plant 71, Bldg. 17, Room 2. Instructor, Vincent A. Martin, Astro management development coordinator. First session Feb. 10.

Introductory Mathematical Analysis for Business—Thursday, 5-7:30 p.m., Astro Plant 71, Bldg. 17, Room 1. Instructor, G. H. Burgin, Astro design specialist. First session Feb. 11.

Registration will be accepted through the second class session. Enrollment forms, contained in the brochures now available at educational services offices at both plants, must be sent with course fee to the University Extension office, 1221 Fourth Ave., San Diego.

Information about the courses which lead to a Professional Designation in Business Systems Management may be obtained from Convair educational services, ext. 491, Plant 1; or Astro educational services, ext. 1931, Plant 71.

Classes in Handling Small Boats Begins

Free classes in small boat handling are open to all General Dynamics people under sponsorship of the San Diego Power Squadron.

Courses open this week at Sweetwater High School, National City, Feb. 2; Cabrillo School, Point Loma, today (Feb. 3); and Naval Amphibious Base, Coronado, today. Registration is at 7:30 p.m.

The course, which meets one evening a week for approximately 13 weeks, is a comprehensive introduction to safe boat operations. Subjects covered include safety afloat, seamanship, small boat handling, equipment and government regulations, rules of the road, aids to navigation, the mariner's compass, charts and piloting. The course is open to both men and women at no charge.

Few Openings Remain For Winter Weekend

Only a few openings (and even less time to book them) remain for the General Dynamics Ice Skating Club-sponsored "Winter Weekend at Big Bear Lake," Feb. 12-14.

Reservations close Friday (Feb. 5).

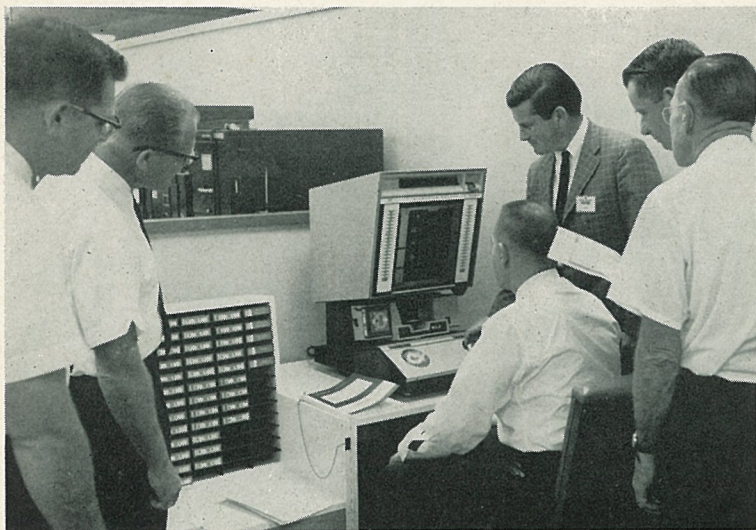
The bargain package costs \$12 per person, with half-price rates for children under 8. It includes two nights' accommodations at Wawona Lodge, and three meals. Participants are expected to arrange their own transportation.

Reservations are being accepted at employee services offices at Plant 1, Plant 71 and Plant 19. Information is available from Barbara Simpson, Plant 71 ext. 4041.



STRAIGHT TALKERS—A. J. Woodington, left, and J. L. Beck, review experience in making first presentation in GD/Astronautics Management Club anti-dropout program at Memorial Junior High School. Men spoke from experience; hope they "reached" at least some of the 40 ninth grade potential dropouts to whom they spoke.





HERE'S HOW — Convair engineers are briefed on operation of new Visual Search Microfilm File system recently installed in engineering department for fast location of technical product data. Demonstrating is Robert O. Walker, VSMF district manager, in background.

Microfilm Reference System Cuts Search For Product Data

A unique data storage and reference system which will enable design engineers and purchasing agents to obtain product and parts information ten times faster than before has been installed

at General Dynamics/Convair.

The Visual Search Microfilm File (VSMF) system for retrieval, storage, and dissemination by microfilm and viewer of technical product data from suppliers and producers of components, materials, and equipment was acquired late last month. It is located in the engineering mechanical and support systems section, Bldg. 5, third floor, area B.

The microfilm system, developed by Information Handling Services, Inc., of Denver, is designed to reduce substantially the amount of time spent by engineers and others with a "need to know" in searching through numerous supplier catalogues for technical product data.

It presently contains more than 110,000 pages of vendor technical and catalogue data from over 3,000 suppliers to the aerospace and electronic industries. It also contains MIL Handbook 300 on ground support equipment for air weapons systems; Federal Handbook H4-1 and H4-2, and MIL-D-70327. This information is revised and updated every four months.

Also, data in Convair's vendor file is in the process of being microfilmed in a supplemental file for insertion into the basic VSMF catalogue.

A fully cross-referenced product index tells the user exactly which microfilm cartridge contains the specific information he seeks. He slips that cartridge into the reader unit, touches a lever which advances the film, and within seconds is comparing information from many suppliers of the desired product on the VSMF viewing screen.

Photocopies of any of the microfilm pages, if needed, can be automatically produced in 15 seconds by the push of a button.

Demonstrations on operation of the system were given by Robert O. Walker, district manager of Information Handling Services.

Dick & Dee Dee Set For Special Teen Club Event

"Dick and Dee Dee" will be featured performers at a special ARA Teen Club dance on tap Feb. 20.

For this event, admission will be \$1 per person, with each member allowed a guest and guest couple for the evening. The popular duo is expected to perform their hit recordings such as "Without Your Love" and "Thou Shalt Not Steal."

The big night will follow a visit by "The Spats" to the Teen Club dance this Saturday (Feb. 6). Back after an earlier triumphal appearance, "The Spats" will repeat their popular "Gator Tails and Monkey Ribs" and will introduce their latest release, "There's a Party in the Pad Below."

Admission for this week's dance is 75 cents per person, with each member allowed two guests.

Both dances will be staged from 7:30 to 11:30 p.m. in ARA Clubhouse.

Rockhounds Put Jade on Agenda

"Jade" is the topic for ARA Rockhound Club's meeting at 7:30 p.m., Feb. 10 in ARA Clubhouse, and Cecil Heyn as guest speaker will discuss the subject and display his collection.

Also on the agenda is a discussion of a Feb. 13-14 field trip to the Fort Irwin area, some 35 miles northeast of Barstow, where club members will collect "Chapinite," petrified wood, jasper and agate. Full details will be covered at the meeting.

Rockhounds gather for a business session the second Wednesday in each month, and plan periodic trips such as the Fort Irwin trek. Meetings provide a forum for exchanging information on mineral, gem stone and fossil collection, their identification and handling, and replated topics.

ARA Bridge Group Hosts IRC Players

More than half-a-hundred players turned out Jan. 22 when ARA Bridge Club played host to its counterparts from other firms in San Diego Industrial Recreation Council.

Winners of the evening's play in ARA Clubhouse were Mr. and Mrs. C. A. Miller of GD/Astro, north-south, and Mr. and Mrs. John Norman, General Atomic, east-west.

At the club's Jan. 15 play night, Ceil McCullough and Margaret Grindstaff won N-S, with Eve Leasure and Freddie Combs, E-W.

The group welcomed the new year on Jan. 1 by following a buffet dinner with play won by Stella Christie and Margaret Grindstaff, N-S, and Sally and Mits Ishihara, E-W.

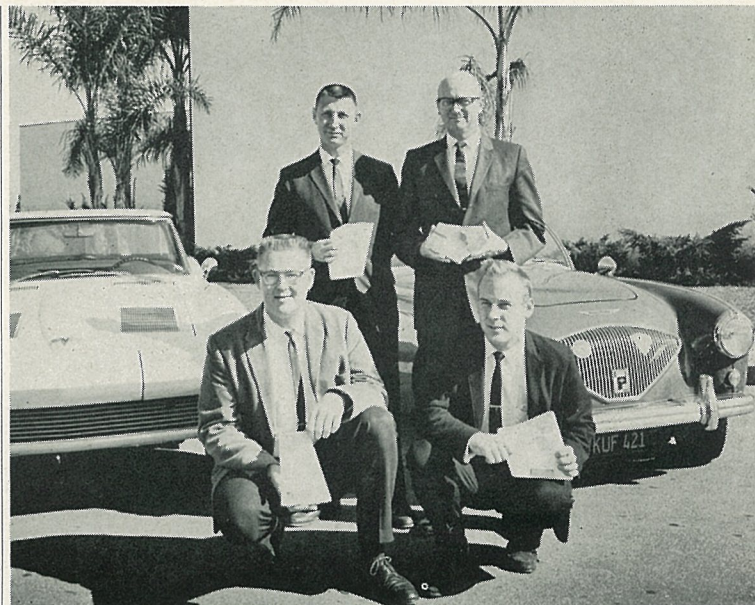
Meeting, Field Trip Set Explorers Pace

After a business meeting Feb. 17, 7:30 p.m. in ARA Clubhouse, Explorers Club members will take part in a field trip to McCain Valley Natural Resources Area, Feb. 20 and 21.

The outing, in the In-Ko-Pah Mountains north of Boulevard, will feature a chuck wagon style breakfast Saturday morning, followed by a rigorous "summit pack" canyon hike for experienced outdoorsmen, and excursion hikes for the less hardened.

Larry Lesh, who will lead Saturday's expedition, will also guide an assault on Sombbrero Peak Sunday. Breakfast and excursion hikes will be directed by Joe and Kay Quijada.

Details on both meeting and the outing are available from ARA Commissioner R. G. Bowen, 278-9846.



CLASS LEADERS — Jack Gallant, standing left, and ARA Commissioner E. S. "Judge" Penick display first-in-class trophies each earned in 1964 ASEBRING championships. Kneeling are Bill Kirk, left, and Dick Byrd who ranked fifth and third respectively in competition classes in San Diego Sports Car Clubs Council scoring. Forming backdrop are Sting Ray (Kirk), left, and Austin Healy (Penick).

ARA Autoists Capture Top Slots In Area Sports Car Standings

Five members of ARA Sports Car Club finished "in the money" and received trophies recently at presentation of awards for the 1964 ASEBRING championship by San Diego Council of Sports Car Clubs.

ASEBRING (All Events But Racing) honors are based on cumulative performance in a variety of Council-sanctioned events during the year—autocross, hill climb, slalom, tralom, etc.

Awards were divided into classes according to engine size of the competing car.

First went to Jack Gallant, Dept. 141-3, Class A (Lotus), and to ARA Commissioner E. S.

"Judge" Penick, Dept. 633-0, Class D (Austin Healy).

Dick Byrd, Dept. 549-0, placed third in Class C (TR-3), and fifth place awards went to Bill Kirk, Dept. 141-2, Class E (Sting Ray), and Helen Gallant, Class H (Lotus).

Standings of other members of the ARA club were: Bill Kite, 15th, Class A; Bruce Bertsch, 15th, Class C; Ed Tilford, 17th, Class C; Bill McQuillen, 16th, Class D; Jerry Sturm, 16th, Class E.

Last year, ARA Sports Car Club won the Council's Club participation trophy.

Ticket Sales Open Next Week For 'Astro Night at Disneyland'

Tickets for "Astro Night at Disneyland" go on sale Feb. 11 at employee services (Bldg. 8) and from Management Club Boosters located throughout GD/Astro facilities.

The event, March 27, will see the entire Disney facility turned over to GD/Astro employees, their families and friends exclusively from 8 p.m. until 1 a.m. Although arrangements were made by Management Club, the affair is open to all employees.

Tickets cost \$3.75 per person, with children under 3 admitted free. These must be obtained in advance, as no tickets will be sold at the gate.

For this price, participants get free parking, admission to the park and unlimited use of Disneyland rides and facilities. This in-

cludes as many visits as are desired to the unusual Tiki Room, which normally carries an added admission charge, even for holders of Magic Kingdom Club cards.

Certain facilities will be closed. These are Tom Sawyer's Island, Sleeping Beauty's Castle, Indian Village, Fantasyland Theatre, and shooting galleries.

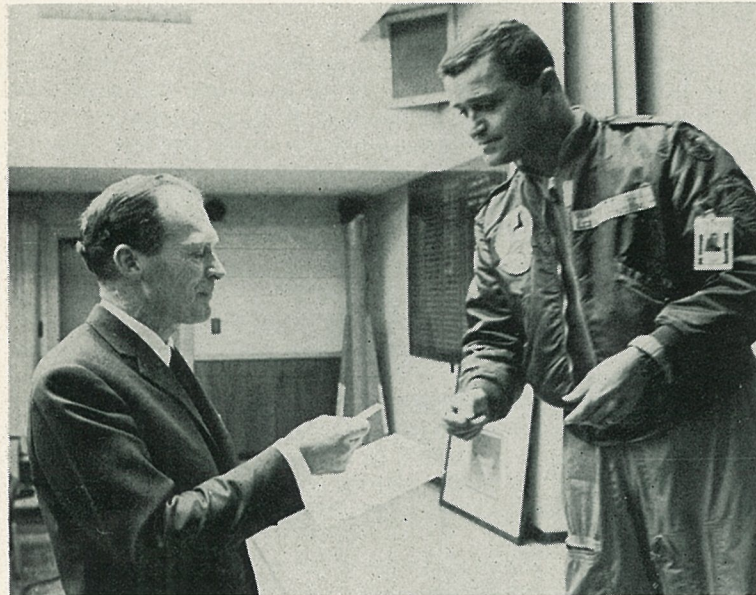
Everything else is open, including park food services.

Round trip bus services, San Diego to Disneyland, will be provided at a cost of \$2.35 per person for those who wish to use it. This will require a special ticket, also available from Boosters and employee services.

Arrangements are also being made for special motel rates for those who wish to stay in the area overnight.



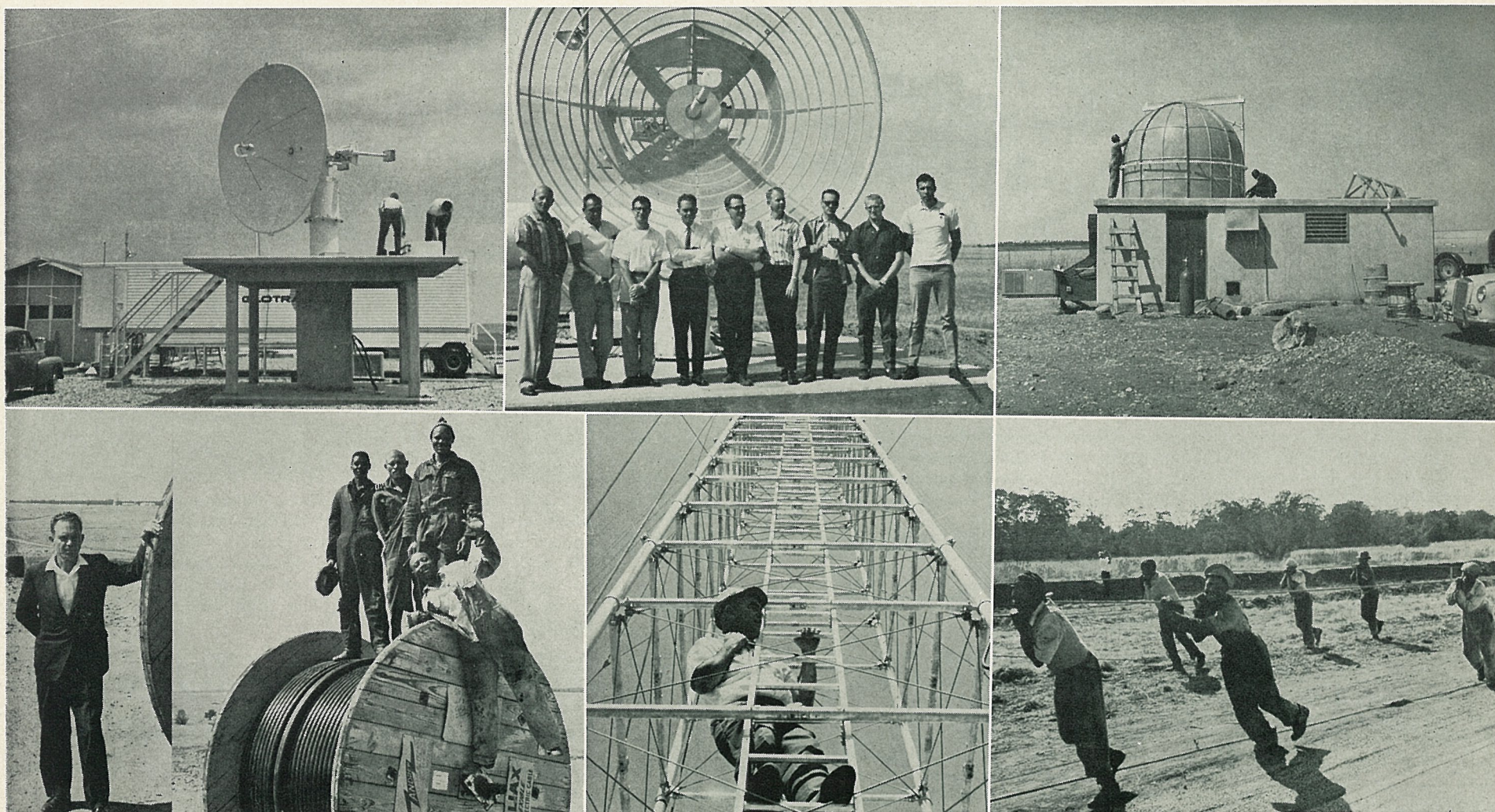
SOLID SUPPORT — GD/Astro employees at Cape Kennedy backed United Fund Campaign not only through financial support by their Con-Trib-Club, but with assistance in conduct of effort. Operations Director K. E. Newton, seated left, served Fund as vice president and assistant general campaign chairman; Kay Kerr, seated right, was section chairman. Standing are Don Larson, left, loaned executive, and Rod Bricker, South Brevard County publicity chairman. All received certificates of appreciation from Newton.



ICELANDIC VIP FLIGHT — Agnar Kofoed-Hansen, Director General of Civil Aviation for Iceland, receives Mach II credentials to commemorate first flight in Convair-built F-106 jet interceptor from Lt. Col. Maurice D. Surratt, commander of 95th FIS, Dover AFB, Del. Hansen lauded handling characteristics and maneuverability of speedy craft.

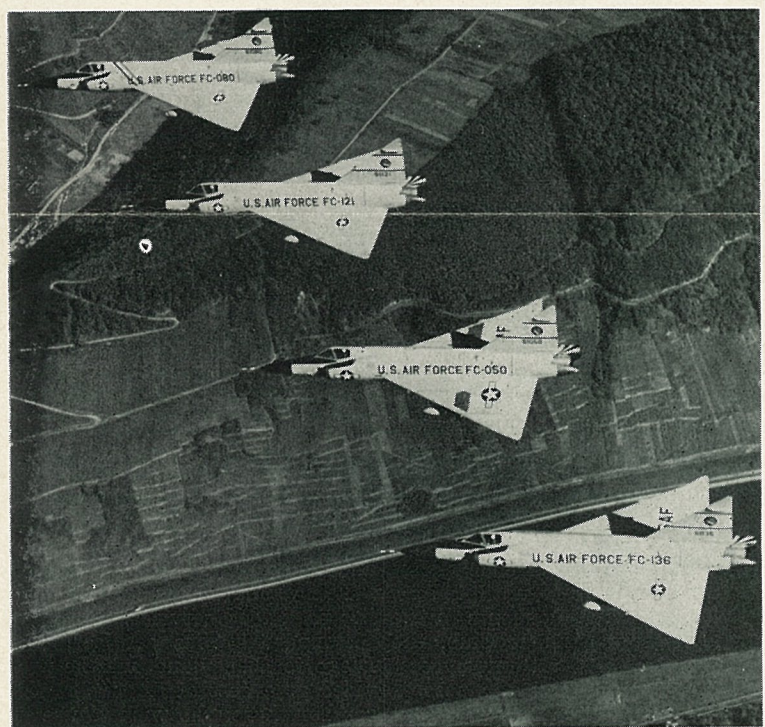


OPERATION UNDERBRUSH — Something may be wrong if the volume of outgoing mail exceeds that which is received. If you need a reply, state clearly what you want, when, and sometimes, why. And there are other ways to get an answer without flooding the mails: telephones, for instance.



GLOTRAC LINK—At upper left is recently-completed GLOTRAC station at Pretoria, South Africa, latest link in global space vehicle tracking network built by General Dynamics for Air Force. Located mid-way between Pretoria and Johannesburg, central site consists of instrumented GLOTRAC trailer for data acquisition, transmitting and receiving antennas, direction finder precision antenna, calibration tower, and power house. Central station is connected by coaxial cable to two remote "slave sites," or sub-stations (top photo at far right), each two miles away forming L-shaped base line system for accurate tracking. Top center shows line-up

of GD crew (from left) E. Frank Smith, Raymond C. Hanson, Louis DeBeer, Walt Buniger, "Red" Jenkins, Eugene Swindell, Sam Zannin, Jim Nellis, Marshall Huff. Not in picture was Jack Kelly. Lower photos, from left, Buniger, on-site manager, alongside huge spool of cable topped (in next shot) by clowning Bantu natives. Local laborers worked at 25 cents an hour for sub-contractor on job. At far right, natives tug at ropes to set up section of 328-ft. tall calibration tower which T. B. Field, engineer in charge of GLOTRAC site preparation, is climbing (center below). GD men are all back home except DeBeer, now training RCA technicians.



ON PATROL—Formation of Convair-built F-102s from 496th FIS, Hahn Air Base, Germany, flying over Rhine River Valley. Convair rep attached to 496th is J. P. Mathis. — Photo by S/Sgt. Robert King.

GD/E Crew Returns From Africa After Setting up GLOTRAC Unit

The seventh link in the Air Force chain of global tracking stations has been completed at Pretoria, South Africa, and successfully employed to track space vehicles on the U. S. Air Force's Eastern Test Range. The GLOTRAC station, a long baseline interferometer tracking facility, can detect a change of less than one inch in the motion of a vehicle 100 miles overhead.

Announcement of the new installation and its first successful tracks was made by General Dynamics/Electronics division, designer and manufacturer of GLOTRAC stations for the Air Force Missile Test Center, Patrick AFB, Florida.

The new Pretoria tracking station acquired recently orbited Titan IIIA and Centaur AC4 vehicles after they had passed over the radio horizon of the other six uprange GLOTRAC stations. Together, the seven stations make up the present GLOTRAC net-

work on the Eastern Test Range, formerly known as the Atlantic Missile Range.

Addition of the Pretoria station is expected to enable the entire network to yield data which represents a major improvement in tracking accuracy. The other six GLOTRAC links are located at Atlantic Field, N. C., Cape Kennedy, Florida, and on the British West Indies' islands of San Salvador, Grand Turk, Antigua and Bermuda.

The Pretoria station is similar to all GLOTRAC continuous wave tracking stations. Its sensitive electronic tracking and data processing hardware are housed in a

mobile, 40-foot air conditioned van for ease of transportation by air, sea or road to a tracking site. Economical and extremely precise in its metric tracking capability, GLOTRAC is designed to track vehicles more than 23,000 miles into space, determine velocity to better than six inches per second, and pinpoint location to within 100 feet.

The GLOTRAC network's primary assignment is to provide accurate tracking information necessary for post-flight mission analysis. It is also used extensively to evaluate the performance of on-board missile guidance systems.

Headquarters

Mitchell Gets Planning Post

DONALD MITCHELL, formerly assistant general manager of Raytheon Co.'s electronic services division, has joined the Corporate Engineering and Program Development staff at New York Headquarters. He will be responsible for program analysis and new business planning.

A 1950 graduate of the University of Maine, mechanical engineering, with MBA (1955) from Harvard School of Business, Mitchell has served as a first lieutenant in the Air Force, Air Defense Command.

* * *

NORMAN B. BESSAC, former submarine skipper, will assist **H. E. LOESER** on Marine Systems of the Corporate Engineering and Program Development staff. Bessac, a U. S. Navy commander, served in the submarine service for more than 20 years. His last command was a Polaris fleet ballistic missile sub. He is a 1944 graduate of the U. S. Naval Academy and holds a master's degree in business administration from Stanford.

People Mobility

(Following are recent personnel transfers among General Dynamics divisions. In parentheses are dates when individuals joined the company.)

MARTIN W. MONTGOMERY (1940) from Astro to Convair engineering; **FRANK R. BLAKE** (1942) from Astro to Convair manufacturing control; **HARRY R. PHOTINOS** (1963) from Astro to GD/Electronics-San Diego; **ROY E. CARIOLA** (1951) from Astro to Convair engineering; **ROY P. POSTON** (1955) from Fort Worth to Convair engineering.

WESLEY S. VICK (1959) from Astro to GD/Electronics-San Diego; **JOHN NORSE** (1952) from Astro to Convair engineering; **JOHN S. RUTKAUSKAS** (1957) from Astro to Convair engineering; **DARYL D. THORNBURG** (1963) from Astro to GD/Electronics-San Diego; **HIRAM R. ROUSH** (1951) from Astro to Convair engineering; **WALKER MATLACK** (1962) from Astro to Convair purchasing; **JACK L. FOGLEMAN** (1953) from Astro to Convair engineering.



CORPORATE GATHERING—General Dynamics division heads of industrial relations meeting with Corporate officials at Jan. 21-22 GD Industrial Relations Conference in New York are (from left), seated: E. C. McManus, GD director of employee services; T. R. Worthy, Pomona; Elmer R. Johnson, Electric Boat; Algie A. Hendrix, GD vice president-industrial relations; James L. Budros, GD director of compensation and personnel; Roger Brown, GD/Electronics; M. V. Wisdom, Astronautics. Standing are: Bill D. Teague, GD administrator of wage and salary; G. S. Crystal, GD coordinator of personnel research; H. Tracy Brooks, manager of personnel placement; Karl Goetter, Liquid Carbonic; Fred E. Chambers, Fort Worth; D. C. Wilkins Jr., Convair; W. D. McCarthy, Electro Dynamic; Murray Bass, Stromberg-Carlson; William Shuttleworth, Canadair; R. W. Trevithick, General Atomic; Carl Oles, GD director of labor relations.

Gutenberg sure started something!



OPERATION UNDERBRUSH—Johannes Gutenberg, with his invention of movable type, is in a sense responsible for today's world—including the deluge of printed material which confronts us daily. Pretend you are living in pre-Gutenberg days to test the worth of your correspondence: Is it worth carving in stone?

First Awards Granted For 'Underbrush' Ideas

Two GD/Astronautics employees early this month received the first cash awards to be paid to salaried employees for paperwork reducing ideas related to Operation Underbrush.

They are Donald G. Wilson, Dept. 576-6 at Vandenberg AFB (WTR), and W. T. Meier, Dept. 964-2 at San Diego.

Both men submitted ideas under a policy effective during January which authorized payment of 10 per cent of the first year's estimated net savings to salaried employees for approved ideas on paperwork reduction.

Since then, GD/Astro's Employee Suggestion (ES) program has been expanded to provide similar cash awards (up to \$5,000) to all employees for approved beneficial suggestions. (Supervisors are excluded from the awards system, since their proposals are handled under the division's cost reduction and value control programs.)

At Vandenberg AFB, Wilson eliminated 50,960 sheets of paper per year with his suggestion that "Valid WAP Lists" (used for labor reporting for WTR direct employees) be published and distributed bi-weekly rather than at the former weekly interval. Savings of \$1,282 stemmed from

reduced manhours and materials involving data processing, reproduction and general accounting. Wilson received 10 per cent — \$128.20.

In San Diego, Centaur Program Analyst Meier received credit for first-year savings of \$356 on an idea which illustrates a basic Operation Underbrush concept. He proposed reducing distribution on daily schedules and agendas, and received an award of \$35.60.

Both Meier and Wilson submitted their suggestions on Jan. 12. Their proposals were processed by the suggestion evaluation and review section of management systems (Dept. 170-2), installed and approved by Feb. 5 — an elapsed time of less than three work-weeks.

During January, GD/Astro employees submitted 844 suggestions, 310 of them (nearly 37 per cent) dealing with Operation Underbrush.

This month an attractive cigarette lighter appropriately engraved with "GD/A" and "Operation Underbrush Award" will be presented in addition to cash awards for the first 150 suggestions for eliminating unnecessary paperwork which are received and approved after Feb. 1.

Astro and Convair Divisions Merge

General Dynamics Corporation late last week announced reconsolidation of its Convair and Astronautics divisions — both based in San Diego — into a single operating division that will retain the historic Convair name.

The reconsolidation was effective as of Monday, Feb. 15.

The Astronautics division had been established in 1957 as an off-shoot of Convair to develop, build and put in place the Atlas intercontinental ballistic missile system.

In making the announcement in New York City, Roger Lewis, president of General Dynamics Corporation, pointed out that the original mission that led to the Company's decision to establish Astronautics has been fulfilled successfully.

"During the concentration on developing the national ICBM," he said, "both the government and General Dynamics felt that a specialized organization was necessary because we were dealing with something entirely new. The success of the Atlas program attests to the fact that the decision was a wise one."

"Today, however, with the increasing maturity of rocket technology, with new developments in the aircraft field and with the advent of manned spacecraft, it is again practical to combine the efforts of these two divisions to better meet present and future needs of our customers."

"Pooling these skills and resources once more also provides a blend of space and aircraft capacity that will improve our ability to compete in today's aerospace market whether in manned space flight or military or commercial aviation or liquid or solid fuel launch vehicles."

J. R. Dempsey, formerly presi-

dent of Astronautics and in charge of that operation since 1954, has been named president of the enlarged Convair division. J. H. Famme, formerly president of Convair, and with that operation since 1936, has been named a vice president and placed in charge of all aircraft programs.

In addition to those in San Diego, personnel of the combined division also are based at the Eastern Test Range (Cape Kennedy, Fla.), Western Test Range (Vandenberg, Calif.), White Sands Missile Range (White Sands, New Mexico), and several foreign countries.

The new division presently employs 16,000 persons. Its production workforce averages more than 12 years of experience with General Dynamics. Combined company-owned facilities of the new division in San Diego cover approximately 5 million sq. ft. of covered work space.

"The combination of talents and facilities now possible," said Lewis, "will be applicable to a number of active and proposed programs of the Corporation. These include such things as Atlas Standard Launch Vehicles produced for the Air Force and NASA; Centaur high-energy launch vehicles for upper-stage space work; Little Joe II solid-fuel launch vehicles; the Charger, a short take-off and landing air-

plane; Dart/Convair transport conversions, which mate Convair-Liner airframes and Rolls-Royce Dart turboprop engines; and long-range telemetering buoys for oceanographic and weather research."

Both divisions also have been working on a number of development contracts and projects covering a broad range of aerospace technology and weapon systems and these will be continued at Convair.

Cost Reduction Of \$3 Million Seen in Moves

Cost reduction of nearly \$3 million are expected to result from the relocation of GD/Astronautics departments in moves currently in progress and scheduled to continue through early April.

Chronologically, the first major shift involved some 450 persons in a move from Plant 19 to Bldg. 33 at Plant 71. Following preliminary rearrangements within Bldg. 33, personnel were relocated from Bldgs. 2, 4 and 24 at Plant 19 in a move which consolidates AWS and SLV project activities at Plant 71.

The next phase, now in progress, will result in evacuation of the materials building (92) in order to return this facility to the owner upon expiration of GD/Astro's lease on April 30.

This action, designed to permit maximum utilization of division work space, will provide a cost reduction of about \$2.9 million — the cost (less moving expenses) of leasing the materials building, taxes and insurance, utilities, and the provision of maintenance, custodial, security and fire protection services over a five-year period.

To be completed by April 1 is a major rearrangement which will find GD/Astro's warehousing functions shifted to Plant 19. Raw and commercial stores, etc., will utilize Bldg. 1; shipping and off-site stores, Bldg. 3. The second and third floors of Bldg. 8 will be used for archives.

Purchasing — the other major operation now housed in the materials building — will be relocated to Plant 71 by April 16. Associated preliminary moves of personnel in some areas of Bldgs. 1, 2, 3, 4 and 33 at the main plant are now complete or in progress.

Purchasing is destined to occupy the first and fourth floors of Bldg. 3.

Vendor interview offices — a necessary consideration in this shift — will be provided for purchasing outside the plant security perimeter in the east wing of Bldg. 2. This area is currently occupied by the community relations and arrangements section of communication department, which will be shifted to new quarters in the southeast corner of Bldg. 2.

Additional interview spaces for purchasing will be set up on the first floor of Bldg. 3.

Atlas Performances Praised by General

SAN DIEGO, Calif. — A flight record of 26 successful space launches in a row by the Atlas vehicle during an 18-month period today won praise from the Air Force for General Dynamics Corporation.

The Atlas' 100 per cent reliability in the period from July, 1963, through December, 1964, brought a cost saving to the nation's space program of approxi-

mately \$164 million.

The Atlas reliability and cost saving figures were contained in a congratulatory letter from Maj. Gen. Ben I. Funk, commander of the Air Force Space Systems Division, to J. R. Dempsey, president of GD/Astronautics, the principal and integrating Air Force contractor for Atlas.

Gen. Funk's letter stated "I have reviewed the results achieved by the Atlas LV-3 and SLV-3 program during calendar year 1964 and am extremely pleased to note that all of the 19 SLV-3 space launches accomplished during this period by the GD/Astro and Air Force SSD management team were successful."

"This makes a total of 26 consecutive space launches, which is a most impressive record, and is illustrative of what can be achieved by proper motivation and sound management. My thanks to all the members of your organization and to your subcontractors for their participation in this achievement."

Two versions of the Atlas space launch vehicle referred to in Gen. Funk's letter were involved in the record 26 launches, Dempsey said. One is the LV-3, a modified Atlas D perhaps most famous for its 100 per cent record in placing the first four U.S. astronauts in earth orbit in Project Mercury, he said. The other version, he added, is the standardized Atlas launch vehicle (SLV-3) which provides increased versatility and economy while retaining its proven dependability.

The Atlas SLV-3 uses plug-in (Continued on Page 4)

Testing Conference Includes Astro Men

Four GD/Astronautics men will participate Feb. 15-17 in the Flight Testing Conference, sponsored jointly by NASA and American Institute of Aeronautics and Astronautics (AIAA) at Redstone Arsenal and Huntsville, Ala.

In a Feb. 15 session on pre-launch test operations, H. Moskowitz, Dept. 693-2 senior design engineer, will present a paper, "Blast Effects from Fragmentation of an Atlas Missile."

On Feb. 17, a future flight test requirements meeting will include a paper, "Centaur Hydrogen Tank Venting Experience," by D. A. Heald, Dept. 962-4 pneumatics design group engineer, and K. D. Holland, Dept. 961-0 airborne design specialist.

Grant L. Hansen, vice president and program director—Centaur, will share the platform during the same session with J. L. Bromberg, a Douglas vice president, to answer questions on "Future Requirements for LH₂ Flight Testing."



TOP SCORE — General Dynamics' J. R. Dempsey and Col. W. Sullivan, Director SLV-3 and Deputy for Launch Vehicles, AF Space Systems Division, proudly display letter from Maj. Gen. Ben I. Funk, Commander SSD, praising 26-in-row successful flights of Atlas launch vehicle. Maj. Gen. Funk referred to 100 per cent record of LV-3 which placed Project Mercury astronauts in orbit and 19 SLV-3 launches.

Log Book Entries

In-Plant Training

ORIENTATION

NEW EMPLOYEES—Educational services staff, ext. 1931. Three hours, Monday, March 1, 8-11 a.m., Room 6, Bldg. 17, Plant 71.

PROFESSIONAL/TECHNICAL

RELIABLE ELECTRICAL CONNECTIONS—Educational services staff. For information and quota, call ext. 1931. Forty hours; runs weekly 7 a.m. to 3:45 p.m., Room 4, Bldg. 17, Plant 71.

PRODUCT IMPROVEMENT—Educational services staff, ext. 1931. Closed registration. Four hours daily.

INFORMATION STORAGE & RETRIEVAL—D. Suchecki, ext. 1931. Ten hours; Monday, Wednesday, Friday, 8:30 to 10:30 a.m., March 1-10, Room 2, Bldg. 17, Plant 71.

AFTER HOURS TRAINING IN-PLANT

BOOLEAN ALGEBRA (Engineering Applications)—Jim Hanratty, ext. 1931. Twenty hours; Tuesdays, 5-7 p.m., March 2-May 4, Room 2, Bldg. 17, Plant 71.

FORTRAN—IBM STAFF. For enrollment, call M. Bauman, ext. 2610. Thirty-two hours; Monday, Wednesday, 5-7 p.m., Feb. 15-April 14, Room 7, Bldg. 17, Plant 71.

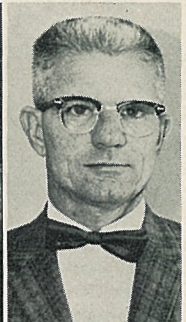
OTHER INSTITUTIONS

CATALOGUES & SCHEDULES—For information about the following institutions, call educational services, ext. 1931: Cal-Western, Grossmont, Mesa, Palomar, SD Adult Evening, SD State, Southwestern, University of SD, UC Extension, UC San Diego.

Joining select ranks of 35-year men at Astro is Harry F. McEwan, Dept. 576-3.



Receiving 25-year service recognition at Astronautics are Wallace G. Fisher, left, Dept. 642-0, and T. A. Billings, Dept. 521-0.



Other new 25-year men are, from left: Laurence G. Mulryan, Dept. 250-1, George C. King, Dept. 989-4, Larry Clements, Dept. 966-0, L. P. Birse, Dept. 143-0.

Papers Presented

BEST—L. E., Dept. 591-1. "Developments in Guidance Error Analysis," Symposium on Unmanned Exploration of the Solar System, Denver, Feb. 8-10.

BOYNTON—F. P., Dept. 596-0. "Composition of the Exhaust Jet of a Model Rocket Engine Operated in a Wind Tunnel," Symposium on Unmanned Exploration of the Solar System, Denver, Feb. 8-10.

CARLSTON—C. E., Dept. 596-0. "Determination of Clean Surface Work Functions by Means of Sputtering and Secondary Electron Emission," American Physical Society meeting, New York, Jan. 27-30.

FERRISO—C. C., Dept. 596-0. "Temperature Dependence of the Total Integrated Intensity of Vibrational-Rotational Band Systems," submitted to Journal of Chemical Physics.

HELLER—E. D., Dept. 192-0. "Value Engineering in a Total Cost Reduction Program," 1964 SAVE Western Colloquium.

LANGFORD—G. J., Dept. 490-4. "Weldable 7000 Series Aluminum Alloys," Huntsville chapter, American Welding Society.

LUDWIG—C. B., with C. C. FERRISO and C. N. ABEYTA, all Dept. 596-0. "Spectral Emissivities and Integrated Intensities of H₂O," submitted to Journal of Quantitative Spectroscopy and Radiative Transfer, University of California.

MAGNUSON—G. D., Dept. 596-0. "Secondary Electron Emission from Single Crystals by Noble Gas Ions," American Physical Society meeting, New York, Jan. 27-30.

MAHADEVAN—P., with G. D. MAGNUSON and C. E. CARLTON, all Dept. 596-0. "Secondary Electron Emission Due to Low Energy Positive and Negative Ions of Hydrogen," American Physical Society meeting, New York, Jan. 27-30.

PENZES—L. E., Dept. 512-1. "Flexural Vibrations of Thin Orthogonally Stiffened Cylindrical Shells Having Finite Length with Clamped-Clamped and Clamped Simply-Supported Edges," AIAA/Aerospace Sciences meeting, New York, Jan. 25-27.

PLUTCHAK—D. A., Dept. 591-1. "Real-Time Tracking Determination Using Kalman's Filtering Technique," Symposium on Unmanned Exploration of the Solar System, Denver, Feb. 8-10.

SEAFORTH—W. C., 145-3. "Failure Modes and Effects Analysis," University of Arizona.

STREETMAN—J. W., Dept. 528-2. "Some Problems in Rocket Propulsion Systems Design and Development," Oklahoma University seminar, Norman, Okla., Oct. 29, 1964.

WYSEWSKI—R. E., Dept. 146-2. "Radiographic Identification of Unknown Materials—A Nondestructive Technique," Aerospace Nondestructive Testing Symposium, Jan. 18-19; Society for Non-destructive Testing spring national convention.

Service Emblems

Service emblems due during February.

Twenty-five-year: Dept. 143-5, G. A. Knauss; Dept. 151-0, J. R. Ernst; Dept. 195-0, Lewis Grant; Dept. 380-1, L. F. Ballou Jr.; Dept. 403-3, W. E. Ladd; Dept. 526-6, F. H. Miller; Dept. 528-3, J. G. Hawkins; Dept. 581-2, Glenn Karel; Dept. 632-0, F. B. Wozniak; Dept. 642-2, W. G. Fisher; Dept. 715-0, E. H. Wallrabenstein; Dept. 756-0, C. M. Shackelford; Dept. 763-0, J. K. Harkins; Dept. 830-0, T. F. McAleer III.

Twenty-year: Dept. 403-3, Lawson Rollo Jr.; Dept. 521-6, Hilda Z. Cresce; Dept. 522-8, F. N. Thudium; Dept. 526-6, R. C. Lambert; Dept. 718-0, W. L. Fissell; Dept. 780-3, J. B. Smith; Dept. 970-1, L. F. Button; Dept. 972-0, F. A. Brown.

Fifteen-year: Dept. 250-1, R. H. Noble; Dept. 374-3, J. M. Silas; Dept. 528-0, F. A. Stephenson; Dept. 549-9, R. F. Kalal; Dept. 571-4, C. L. Cook Jr.; Dept. 576-1, F. A. Rado; Dept. 684-4, B. E. Shirk; Dept. 759-0, G. R. Comfort; Dept. 780-1, Viola M. Beard; Dept. 835-6, Josephine C. Gomez; Dept. 962-2, T. L. Stalaker; Dept. 972-0, M. P. Jones; Dept. 976-3, J. F. Marrs.

Ten-year: Dept. 250-2, Margie S. Brown; Dept. 370-1, J. H. Andrews; Dept. 373-7, D. L. Swingle; Dept. 374, R. A. Ruggiero, W. F. Wennhold; Dept. 547-5, W. G. Guest; Dept. 549-8, Edward Beaver, F. M. Millican; Dept. 570-0, B. G. MacNabb; Dept. 576-1, R. S. Traxler; Dept. 591, K. C. Kinman Jr.; Theresa Vasquez; Dept. 596-0, Peggy M. Hayes.

Dept. 661-7, H. W. Wiebe; Dept. 684-1, G. C. Hemphill; Dept. 756-0, J. B. Coburn; Dept. 760-1, H. M. Edwards; Dept. 780, Betty J. Gossett; D. E. Heogh; Dept. 811-0, W. S. Severson; Dept. 826-0, J. E. Wolowsky; Dept. 832-3, Mary A. Maxted; Dept. 833-3, R. C. Murillo; Dept. 834-1, Evelyn K. Quick; Elsie J. Wexler; Dept. 835-6, L. W. Jensen III; Dept. 955-0, Jean M. Lake; Dept. 963-3, W. L. Rix; Dept. 972-0, Bayless Smolk; Dept. 976-3, Robert Kozell; Dept. 978-3, R. W. Brooks.

Retirements

CARLE—W. A., Dept. 312. Seniority date March 27, 1956. Retired Nov. 1, 1964.

MOORE—Leroy Jr., Dept. 520-0. Seniority date May 8, 1942. Retired Feb. 1.

SIMMONS—Willard G., Dept. 382. Seniority date, May 4, 1953. Retired Jan. 29.

Value Record At Vandenberg Under Review

VANDENBERG AFB — Participation of GD/Astronautics folk at Western Test Range in the division's cost reduction and value control programs for 1965 was the subject of a meeting here last month.

Attending were local members of supervision, with E. D. Heller, GD/Astro's CR/VC manager, and Lloyd Curtis, CR/VC coordinator for Dept. 500, on hand from San Diego.

During the fourth quarter of 1964, VAFB functions achieved audited savings of \$255,425—some 563 per cent of goal for that period. The year's savings amounted to 240 per cent of goal.

Cost reduction here is coordinated by Frank McQueary, base controller, assisted by R. V. Jacobs and D. B. Wilson.

Curtis, introduced by McQueary, disclosed that savings targets for 1965 had been upped, amounting to \$1,050 for each GD/Astro employee on board for the year.

Heller's remarks outlined the division's total cost reduction picture.

VAFB supervision attending the session included: W. C. Connolly, V. D. Wynn, K. D. Wasser, B. E. Shultz, V. C. Cardiel, E. C. Pereira, G. W. Cooper, M. E. Post, C. D. Wirt, O. J. Washburn, L. L. Jella, E. B. Frink.

Also, A. H. Hoine, R. N. Keltner, G. A. Keln, D. I. Miyake, Ivan Kurman, J. H. McGan, F. A. Rado, A. L. Scheibel, L. L. Fowler, R. A. Clark, D. A. Munizza, E. A. Millar, McQueary, Jacobs and Wilson.

Fellowship Grants Deadline Approaching

Application deadline is approaching for GD/Astronautics employees hoping to be considered for the doctoral fellowship grants awarded annually by the division.

Applications are due at educational services (Dept. 130-3) by March 1, for school attendance beginning this fall.

Fellowships are awarded for one academic year, renewable upon evidence of satisfactory performance. They provide up to \$4,000 paid in equal portions over 10 school months.

Desired prerequisites for candidates are a master's degree or equivalent graduate study. Besides the application, letters of recommendation are required from the applicant's supervisor and from a faculty member.

Hal Sicard, ext. 1931, Plant 71, can provide details on the program.

GD/Astro's first two doctoral fellowships were awarded last year. They went to K. Leon Montgomery, now at University of Pittsburgh, and Archibald Gay, studying at University of London.

Invention Disclosures

HAYWORTH—B. R., Dept. 596-0. Composite Dielectric Energy Storage Capacitor.

HAYWORTH—B. R., C. W. WHITE and E. D. VANSOYK, all Dept. 596-0. Thin Foil Slitting Machine.

MAKI—S. C., Dept. 558. Gravity Gradient Stabilization for Non-Optimum Satellite Inertias and Disturbances.

WOODSON—W. E., Dept. 262-0. Double-Action Pogo Stick Exerciser (particularly used by Astronauts).

YANG—C. T., Dept. 504-0. Micrometer Caliper, Measuring to 10 Micro-inches.

Personals

Words cannot express our gratitude for the flowers, cards and many acts of sympathy extended by our friends at Astro at the loss of our beloved husband and father, George Rosen, Convair Dept. 101.

Mrs. George Rosen and family.

We wish to express our sincere thanks to our many GD/Astro and GD/E friends for the kindness and sympathy expressed during the illness and loss of our mother, Mrs. Anne Stephenson. Your thoughtfulness is deeply appreciated.

Joyce Dillow, GD/Astro Dept. 140-0 Jean Peters, GD/E.

Deaths

HOLLEY—Peter, Dept. 123-0. Died Feb. 4. Survived by three sisters.



COLLECTORS — In top photo, shown with C. E. Plummer, left, and Grant Hansen, vice president and program director — Centaur, is W. T. Meier (center), first at San Diego to receive cash award (\$35) for paperwork reduction in Operation Underbrush. In lower photo, D. G. Wilson, right, Dept. 576-6 cost coordinator at Vandenberg AFB, receives \$128 award from Cost Control Supervisor Bob Jacobs.



CAN DO — GD/Astro folk at Western Test Range (Vandenberg AFB) caught Operation Underbrush fever, as demonstrated by Bob Simon and Mike Mazuch, Dept. 576-3, accepting "dead brush" from Carolyn Vind, Dept. 576-1, Shirley Corn, Dept. 369-9, and Jan Bernardi, Dept. 682-0, during effort which netted 10,960 lbs. of unnecessary paperwork.



CAPE LAURELS—Neil Mullins, left, accepted December Craftsmanship award for Cape Kennedy Complex 13/14 from K. E. Newton, GD/Astro operations director. Guests at informal ceremony included Col. Jo K. Warner, USAF, second from right, and Major L. E. Allen Jr. December awards marked first full year of operation for division's Zero Defects-type Do Good Work program.

Astro Pool Gift Is Largest

The \$7,000 gift of GD/Astronautics Employees' Con-Trib-Club made in mid-1963 toward provision of a swimming pool for therapeutic and recreational purposes at Patton Hospital is the largest single grant received by the fund to date. Donations from throughout Southern California, in addition to the Con-Trib gift, are expected to make the pool a reality by next summer.

General Dynamics NEWS

Published by General Dynamics Corporation, One Rockefeller Plaza, New York, N. Y. 10020; with editorial headquarters at 3302 Pacific Highway, San Diego, Calif. 92112, P.O. Box 1950, telephone 296-6611, ext. 1071. Logan Jenkins, editor-in-chief. Astronautics Editorial Offices, Bldg. 8, GD/Astronautics, Mail Zone 130-01, P.O. Box 1128, San Diego, Calif. 92112. Telephone 277-8900, ext. 3322. Staff: Willard Harwood, editor; Dixie Husted, Convair Editorial Offices, Bldg. 32, Plant 1, GD/Convair, Mail Zone 1-320, P.O. Box 1950, San Diego, Calif. 92112. Telephone 296-6611, ext. 1071. Staff: Grayce Fath, Helen Pemberton.

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Fort Worth, Mail Zone T-63, P.O. Box 748, Fort Worth, Texas 76101. Telephone PErshing 2-4811, ext. 2961. Staff: Dave Lewis, editor; Mary Beck.

Pomona Editorial Offices, Room 119, Bldg. 1, GD/Pomona, Mail Zone 3-13, P.O. Box 2507, Pomona, Calif. Telephone, National 9-5111, ext. 6226-5279. Staff: Glenn Kehr, editor, Daingerfield news office, P.O. Box 947, Daingerfield, Texas. Telephone Lone Star, Texas, 2211, ext. 424.

Affiliated editions of General Dynamics NEWS are published in Rochester, N.Y., covering GD/Electronics, editorial offices, 1400 North Goodman St., Fillmore 2-8000, ext. 5185, Cornelius Hannon, editor; and Stromberg-Carlson, editorial offices, 100 Carlson Road, Hubbard 2-2200, ext. 2245, Gordon Morison, editor; and at Groton, Conn., covering GD/Electric Boat, editorial offices at Groton, 466-3129, Ed Caffrey, editor.

GD's Financial Status Continues to Improve

General Dynamics Corporation late last month announced payment of accrued preference dividends, resumption of common dividends, and a sharp improvement in financial results of the Company for 1964 over those of the prior year.

Earnings per common share were up 15 per cent and sales were up 12 per cent.

Directors of General Dynamics Corporation declared a dividend on the preference stock of \$2.90625 per share, payable March 1, 1965, to stockholders of record on Feb. 10, 1965. This is the amount accrued for the year 1964, when dividends on this class of stock became payable for the first time since its issuance in 1959. The directors also declared a dividend of \$.7266 per share of preference stock for the first quarter of 1965, payable April 1, 1965, to stock holders of record on March 15, 1965.

At the same time, directors declared a regular quarterly dividend of 25 cents per common share, payable March 10, 1965, to stockholders of record Feb. 10, 1965. The last dividend on common stock of General Dynamics Corporation was declared in March, 1961, and paid in May, 1961, and amounted to 25 cents per share.

For 1964, the Company accrued full federal income tax on all its earnings. Through most of 1963, no provision for income tax on the Corporation's earnings was required due to the carry forward of the 1961 loss. For purposes of comparison, 1963 earnings have been restated to include full provision for taxes, according to Roger Lewis, president and board chairman.

CONSOLIDATED NET INCOME ADVANCES

Consolidated net income for the year ended Dec. 31, 1964, was \$42,611,105, equal to \$3.77 per common share after provision for preference dividends equal to 48 cents per common share. This compares with restated net 1963 earnings of \$32,790,059 or \$3.28 per common share when no provision for preference dividends was required.

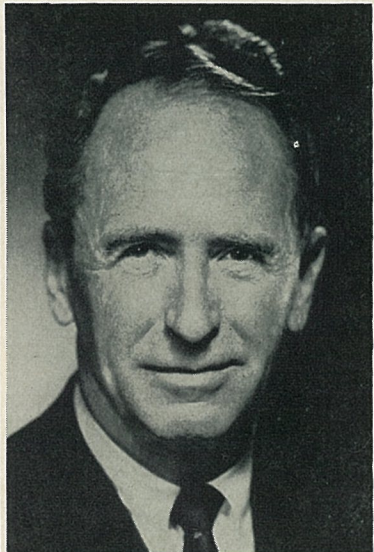
Net sales of General Dynamics and its subsidiaries for 1964 amounted to \$1,579,862,316 as compared with \$1,415,073,684 in the previous year.

New orders booked during 1964 were 10 per cent higher than in 1963. Backlog of funded orders at Dec. 31, 1964, was \$1,129,000,000, compared with \$1,159,000,000 a year earlier.

WORKING CAPITAL SHOWS INCREASE

At year's end, working capital stood at \$191,206,432, up from \$188,450,627 at the end of 1963. Expenditures for property, plant and equipment during 1964 approximated \$35,000,000.

The Corporation's long-term debt at the year's end amounted



Roger Lewis, General Dynamics president and board chairman. Directors late last week reported sharp improvement in Company's financial results as reflected in 1964 business reports.

to \$92,835,000, its lowest level in the past six years. No short term borrowings from banks were outstanding at year-end.

Shareholders' equity amounted to \$299,630,000, or \$19.78 per common share. This is compared with 1963 figures of \$256,594,000 or \$15.99 per common share.

GD COMMERCIAL BUSINESS GAINS

"Our industrial and commercial operations continued to grow and represent an increasingly important part of our total structure," Lewis said. "In one key area, electronics, we have effected several realignments which should improve production and marketing in this competitive field. One step was the merger of the Stromberg-Carlson division with the United States Instrument Corporation to broaden our base for further expansion."

"Deliveries to various services and agencies of the United States government in 1964 accounted for approximately 77 per cent of total sales," Lewis said. "This 'defense' category divides into four primary segments: aircraft, missiles and space, shipbuilding and military electronics."

"The remainder goes to industrial and commercial customers. This includes electronic and communication equipment, coal and limestone, nuclear reactors and research, building materials, compressed gases, metalworking equipment, electric motors, and environmental control products."

F-111 UNVEILING A 1964 HIGHLIGHT

"The 'commercial' part of our business," Lewis said, "represents 23 per cent of our sales, but a somewhat larger proportion of our net profits, and in its own right is a substantial operation which would rank well up in American industry. All our commercial operations have significant potential for growth."

According to Lewis, a highlight of the year was the unveiling and first successful flight of the revolutionary new F-111 variable-sweep wing tactical fighter.

Other significant 1964 achievements by General Dynamics were the roll-out and first flight of the Company's versatile and rugged COIN aircraft, the Model 48 "Charger," and the introduction of the CL-84 "tilt-wing" vertical take-off and landing aircraft.

During 1964, General Dynamics' Atlas established a record as the nation's most reliable launcher of spacecraft and satellites.

22ND ATOM SUB LAUNCHED IN 1964

The Company also launched its 22nd nuclear submarine, the Polaris-carrying Benjamin Franklin, in 1964. In addition, two civilian research submarines — one, the first aluminum-hulled deep submergence vessel ever built — were launched in the past year.

Preliminary production contracts were also received by General Dynamics during the past year for the Redeye shoulder-fired anti-aircraft missile for the U. S. Army and Marine Corps and a development contract for a new surface-to-air standard missile for the Navy.

"Expenditures for defense procurement have leveled, but there is no question as to the need of our country to maintain strong and balanced military forces for the indefinite future," Lewis said. "Moreover, there is no reason to expect any diminution in the rapid expansion of technology from which major improvements in weapons systems have come."

"With the leveling of defense expenditures, competition has increased and we expect it to increase further. We believe that General Dynamics, with its sound base of commercial and defense operations and its great depth of talent and facilities, can meet these challenges."

Higgins Will Chair Western Committee

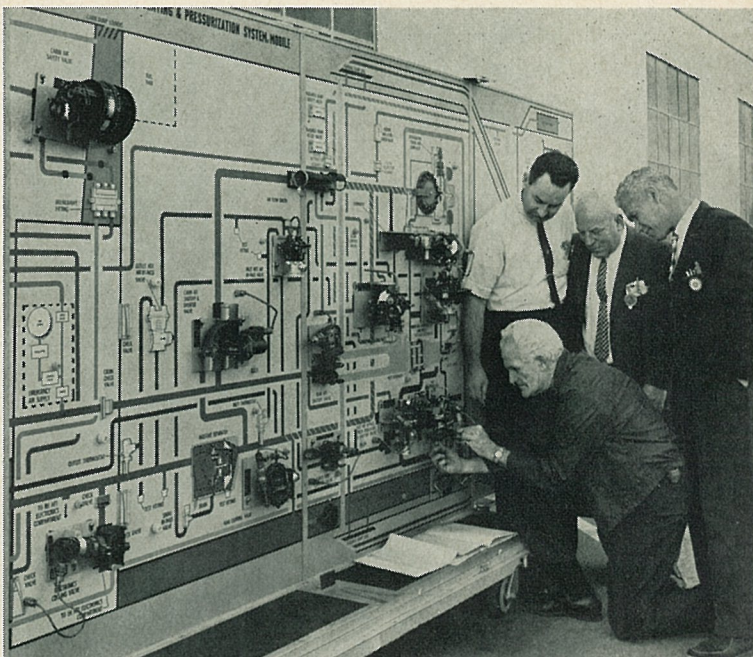
J. W. Higgins, traffic administrator in GD/Astronautics Dept. 833-2 has been elected chairman of the Western Traffic Committee, Aerospace Industries Association, for 1965.

The committee includes traffic executives of aerospace firms west of the Mississippi River, and deals with traffic problems of interest to the industry in general. Through the committee, member firms are kept informed of significant development in the transportation field.

President Johnson Comments on Atlas

Specific notice of the Atlas reliability record was included in President Lyndon B. Johnson's message to Congress Jan. 27, on U. S. aeronautic and space activities.

The President noted, "In many respects as outstanding as the new rocket achievements was the reliability attained by our time-tested booster. For example, over a period of 18 months the Atlas launch vehicle performed 26 successful flights for a reliability record of 100 per cent. Other boosters also showed fine reliability scores. By exceeding anticipated reliability, such performance resulted in savings to the taxpayers for the missions accomplished."



SELL-OFF—Convair inspector James D. Sanders (kneeling) and Navy inspector Manuel A. Martinez (far right), acting for Air Force, accept modified F-106 mobile training unit following completion of task at Convair. Engineer R. M. Zeich and W. M. Clapp, Dept. 131 assistant foreman, observe final inspection.

Modification of Training Units For F-106s Finished by Convair

Modification of two F-106 mobile training units was completed at GD/Convair the end of last month, with the third, and last under the current Air Force task, due for delivery the latter part of March.

Convair's order, received a year ago under the service engineering call contract from San Antonio Materiel Area, called for incorporation of changes necessitated by updating of the aircraft's air conditioning system.

Two major panels on the sections displaying the heating, venting, and pressurization system were redesigned completely with a new arrangement of wiring and relocation of switches. Six components were added. The moisture separator, major part of the air conditioning system optimization, is animated to pictorially display internal workings; and facsimiles of the thermostat and valves supporting the separator are installed in either animated or overlay form.

Product support engineering group supplied 110 drawings during the task, said R. M. Zeich, Convair project engineer. Modification work was accomplished in Dept. 131 under direction of W. M. Clapp, experimental assistant foreman.

First modified unit was to go back to its original location at

Duluth AFB, Minn.; second, or MTU-4, will go to McChord AFB, Wash.; while the third, MTU-5, will be shipped to Selfridge AFB, Detroit, Mich., upon completion.

In addition, two kits, assembled at Convair, were shipped the first of the month to Langley AFB, Va., and Tyndall AFB, Fla., for modification of similar training units at these bases.

Service parts department is responsible for administering all orders coming to Convair under the AF service engineering contract.

Chinese Government Orders S-C Equipment

A contract for about \$125,000 has been awarded Stromberg-Carlson Corp. by the Nationalist Chinese Government (Formosa).

The contract calls for the manufacture, delivery and installation of a 1000 line XY switchboard for the Nationalist Chinese Army. It will be used at army headquarters at Taipei.

Earlier, Stromberg-Carlson had received another contract that provided a 1600 line XY switchboard for the Nationalist Chinese Navy to be used at its headquarters at Tsoying, near Kaohsiung in Southern Formosa.

People Mobility

Interdivisional Transfers

(Following are recent personnel transfers among General Dynamics divisions. In parentheses are dates when individuals joined the company.)

MILON W. HARTMAN (1955) from Astro to standards engineer, Convair; JESSE C. PERRY (1941) from Astro to cost estimator, GD/Electronics-SD; HOWARD R. MacDONALD (1956) from Astro to senior design engineer, Convair; VERNON AVERY (1962) from Astro to reliability engineer, Convair; GEORGE E. IRWIN (1950) from Astro to Electric Boat; ROBERT W. SHILLADY (1963) from Astro to electronics engineer, GD/Electronics-SD.

WARREN E. NEWTON (1952) from Astro to Convair training specialist; HOWARD J. MALAN (1962) from Astro to electronics engineer, GD/Electronics-SD; H. C. MURRAY (1951) from GD/Electronics-SD to GD/Pomona; DOMINIC DE CRESCENZO (1951) from Astro to Convair engineering; LEWIS A. CORWIN (1957) from GD/Electronics-Rochester to Stromberg-Carlson, Rochester industrial relations; ALFRED W. LAWSON (1961) from Astro to design engineer, Convair.

JOHN J. LINK JR. (1959) from Astro to Electric Boat; ROLAND F. NUETZMAN (1963) from Astro to electronics engineer, GD/Electronics-SD; B. J. BERNHARDT (1957) from Convair to Fort Worth; THOMAS G. FLEMING JR. (1952) from Astro to senior electronics project engineer, GD/Electronics-SD; DONALD Y. CHINN (1964) from Astro to design engineer, Convair; ROBERT G. KISNER (1963) from Astro to senior electronics engineer, GD/Electronics-SD.

JOHN R. STITT (1953) from Astro to senior standards engineer, Convair; JOHN E. FLEMING (1957) from Astro to GD/Electronics-Rochester; CHESTER O. HILL (1942) from Astro to Convair; JAMES G. BUMSTEAD (1958) from Astro to publications technical specialist, GD/Electronics-SD; THOMAS A. PATRICK (1960) from Astro to electronics engineer, GD/Electronics-SD; ROBERT L. CHERRY (1953) from Astro to Electric Boat; EVERETT R. PETERS JR. (1950) from Astro to program analyst, GD/Electronics-SD.



"We'd rather you say 'Maneuver the spacecraft on its original course' rather than 'Jigger it around 'til it heads for the right star...'"



MUSCLE BUILDERS—Wide-angle photograph taken by GD/Astro's T. C. Mitchell gives comprehensive view of facilities available to members of ARA Health Club. All General Dynamics employees are eligible to join. Dues are \$18 per year for an individ-

ual membership; \$27 per year to enroll all members of an employee family. In addition to facility shown, membership privileges include use of new steam room, personalized exercise programs, professional instruction and supervision in use of all equipment.

Classes in Gym Have Openings

New gymnastics classes to be operated in conjunction with ARA Health Club and open to all General Dynamics employees and their families still have a few openings remaining.

Two children's classes are now meeting at 10 and 11 a.m. each Saturday, with participants divided according to age. Other classes for men and women will begin in the near future.

Conducted by Health Club Director Frank Echevarria, the activity consists of a series of weekly meetings over a six month period. Fee, including instruction and use of equipment, is \$6 for the first family member who signs, with additional members of the same family enrolled for \$3 each.

Equipment, available or presently on order, includes parallel and high bars, mats, etc., and will be set up in ARA Clubhouse auditorium during class sessions.

Details on the activity are available from Echevarria, Plant 71, ext. 1111.

Customer Service, Flight Test Managers Named at Convair

In an organizational change within Convair engineering, O. W. Harper is named manager of customer service and E. D. Shannon appointed manager of engineering flight test, according to an announcement this month by C. W. Frick, vice president-engineering.

Harper will continue to report to J. M. Adamson, director of design development. In his present position he will be responsible for all customer service on military aircraft, the direction of military aircraft project work, and for the field installation service of Dart-

Convairs. Work involving completion of the four-engine jet program also will continue under Harper's direction.

Shannon reports to the director-advanced design. All individuals concerned with flight testing for such programs as Little Joe II launch operations, Model 48 Charger flight test, and Dart-Convair flight testing will report to Shannon. He also will be responsible, with his staff, for negotiating provisional and final tickets on commercial aircraft with Federal Aviation Agency.

Officers of Newly Reorganized GD/E Mgt. Club Are Installed

Officers of the newly-reorganized GD/Electronics Management Club at San Diego were seated at the Jan. 28 dinner meeting at Bahia Restaurant, Mission Bay.

J. J. Janda of Astronautics, acting NMA Zone A director, was installing officer.

Installed were Kent Sinclair, president; K. W. Strowig, second vice president; R. L. Williams, treasurer; O. D. Robertson, secretary; and the board of directors, L. M. Hanson, three-year member; J. R. Graves Jr., two-year; and Cal Franklin, one-year.

G. W. Leesch, first vice president, was installed in absentia.

Speaker of the evening was Jack L. Bowers, Corporate director of electronics systems, who traced development of the Electronics division and its impor-

tance in Corporate planning for the future.

B. G. Anderson, GD/Electronics-SD chief engineer-design engineering, outlined current operations of the San Diego facility and explained programs now under way and in proposal stages, putting emphasis on GD/E's working relationship with other divisions to combine GD capabilities on such large programs as Apollo Instrumentation Ships.

Also attending the meeting from New York Headquarters was Daniel Semels, manager of market development-international.

Others at the head table were W. F. Briles, project manager-radar products; Eugene Gottesman, manager of marketing; Paul Slick, chief engineer for research and advanced techniques; Frank J. Hickey, assistant to the manager; Don L. Illeman, contracts; T. H. Scholder, project manager-tracking; and D. C. Newlon, manager of operations.



OVERLOAD—Handling stream of "problem mail" such as Frank Bucheit, left, and Charles Johnson, do here, is a full-time job in GD/Astro's mail room.

Help Choke Off Stream Of Extraneous Mail

Bothered by a constant stream of advertisements, fliers, and "newspapers" which shows up on your front porch at home? Then perhaps you can sympathize with a similar problem which plagues GD/Astronautics.

Every working day hundreds of unauthorized magazines, ads, newspapers and bulk mail items pour into the division mail room. This mail—much of it with an incorrect or incomplete address—amounts to more than a ton per week.

And it costs money! Two GD/Astro mail clerks work full time on "problem mail," picking it up, identifying it, sorting it out.

First, if you receive non-approved materials, use a change of address card (POD Form 3578) available at the mail room, Bldg.

4, to ask publishers to make future mailings to your home.

Second, if a publication "catches your eye," see if it's available in the library, or, can you share an authorized copy being received by someone else? If you do ask to be placed on the mailing list, then use your HOME address. This applies particularly when returning the cards for "free literature" included in many pseudo-trade publications.

"In a sense, when GD/Astro handles mail of this kind, the division is expending funds simply to advertise another firm's product or services," explained L. W. Fitzgerald, office services general supervisor. "Obviously this is not good business, and employees are urged to cooperate in eliminating the practice."

Teen-Ager Parents Join in Program

GD/Astronautics employees who are parents of teen-agers have been invited to participate in a new program sponsored by Family Service Association, a UCS organization which has received Con-Trib-Club approval.

A "Parents of Teen-agers" discussion group now meets each Monday, 7:30 to 9 p.m. in the Family Service building, 7645 Family Circle (across from Kearny High School).

Another discussion series, 10 weeks in length will open March 24 for parents of children 6 to 12.

Registration for both is handled through Family Service Association, 279-0400.

QUALITY CONTROL PANELS MEETING

Representatives from most divisions met at GD/Fort Worth Feb. 15 through 17 for the General Dynamics Panels on Reliability and Quality Control.

Theme of the conference was "Cost Effectiveness Through People."

J. Y. McClure, Corporate director of reliability, quality control, and value control, presided.

Presentations were scheduled by McClure, A. J. Woodington, P. I. Harr, L. I. Medlock, C. C. Campbell, and C. W. Foster, of Astronautics; Cdr. K. N. Sargent, Bureau of Ships; M. Hardenburg, USA Missile Command; D. Hill, Electronics; R. V. Shields, C. Wallman, and W. J. Martin, Convair; T. W. Dunn and O. R. Goode, Electric Boat; K. Sinclair, Electronics (San Diego); A. C. Hagen, Stromberg-Carlson; and R. A. Lennon, Pomona; J. C. Herr and E. R. Weiher, GD/FW.

Atlas Performances Praised by General

(Continued from Page 1)

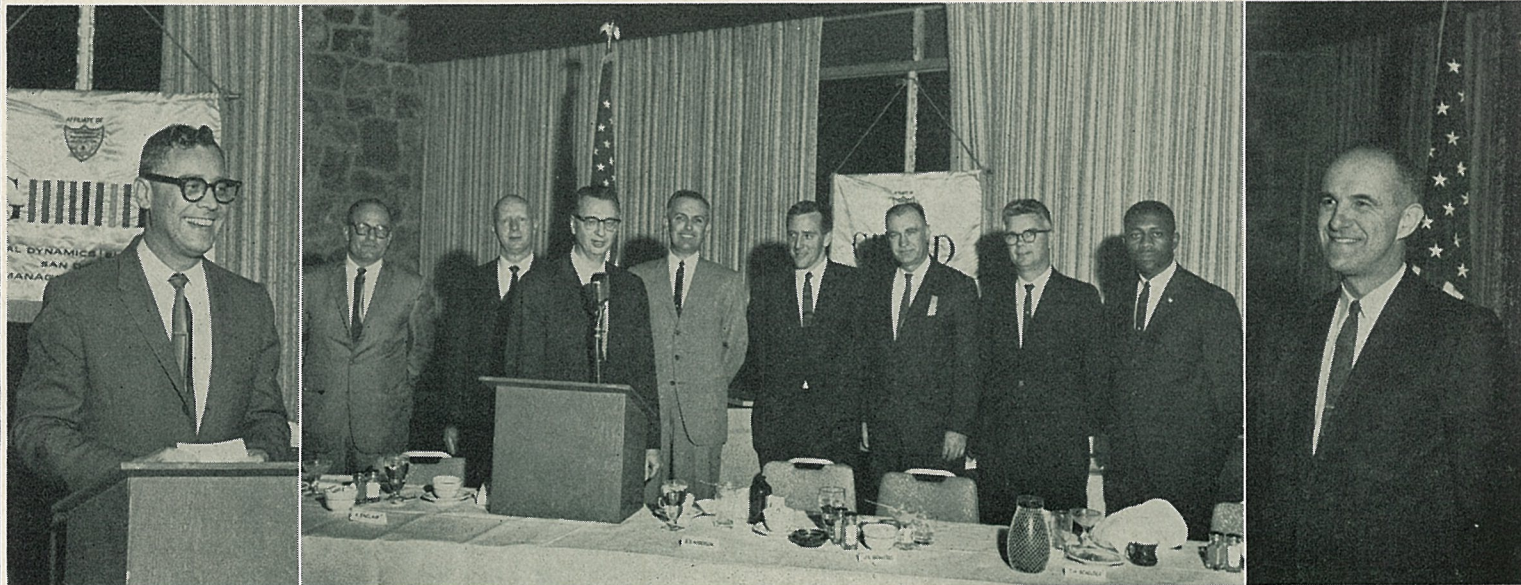
kits to readily adapt it for various space missions from either the Eastern or Western Test Range, Dempsey said.

"The Atlas is produced by the Air Force for a number of their own space programs, as well as for NASA missions," he said. Among the 26 successful flights, Atlas lifted such payloads as the Ranger lunar spacecraft, Vela nuclear detection satellites, Centaur high-energy spacecraft, Project Fire stratospheric re-entry test vehicle, an Orbiter Geophysical Observatory (OGO), and Mariner Mars probes.

Science Directory Published in Wash.

A new directory to help meet information needs of scientists and engineers has just been published by the National Referral Center for Science and Technology at the Library of Congress.

The 356-page book is titled, "A Directory of Information Resources in the United States: Physical Sciences, Biological Sciences, Engineering."



CLUB INSTALLATION—Center shot shows new GD/E Management Club officers during Jan. 28 installation ceremonies (from left) Keith W. Strowig, second vice president; Kent Sinclair, president; Jerry J. Janda, installing officer for NMA at microphone; O. D. Robertson, secretary; R. L. Williams, treasurer; J. R.

Graves Jr., L. M. Hanson, and Cal Franklin, board of directors. Speakers of evening were (photo at far right) Jack L. Bowers, Corporate director - electronics systems, and (far left) B. G. Anderson, GD/E chief engineer - design engineering. Also present was Daniel Semels, GD manager of market development-international.



GLIDER HI-JINKS — Bowlus Albatross sailplane makes pass at spearing balloon at Torrey Pines gliderport, scene of upcoming Feb. 27-28 annual soaring championships in which General Dynamics sailplane enthusiasts play major roles. — Photo by Mel Forbes.

Glider Experts Prepare For Soar Championship

General Dynamics glider experts are priming themselves for participation in the 19th annual Pacific Coast Mid-Winter Soaring Championships set for Feb. 27-28 at Torrey Pines gliderport.

J. R. Spurgeon of Convair Dept. 6 will be at the mike to announce and describe events, as he has every year of the meet's existence.

Intending to compete in soaring events are Walter Mooney of General Atomic, Ernie Shattuck of Astro Dept. 336, and Steve Kecskes of Convair Dept. 131.

Sterling Starr of Astro Dept. 583, and former winner of the coveted John J. Montgomery Memorial trophy for best overall performance in the 1961 event, will work on the meet operations committee.

More than 30 ships are expected to enter the event, which is co-sponsored each year by the Associated Glider Clubs of Southern California and the SD Junior Chamber of Commerce at the spectacular soaring site overlooking the Pacific Ocean.

This year's championships are generating more than usual interest throughout the western states because of the new-type high performance planes, many of German design, which will perform.

Contest events will run from 10 a.m. to 5 p.m. both Saturday and Sunday. As usual, sailplanes will vie in spot landing, bomb drop, distance, altitude (Convair trophy), duration.

Admission is free for spectators.

Variety of Vacation Tours Offered Through IR Council

General Dynamics folk planning to participate in vacation tours sponsored by San Diego Industrial Recreation Council have been urged to make reservations immediately.

Early response has already filled some group trips to near capacity, while others are threatened with cancellation since sign-ups must close 60 days in advance of departure.

Prompt action is particularly important for spring trips.

Fire Stations Issue Licenses For Bikes

San Diego Police Department has reminded bicycle owners among General Dynamics employees of licenses available for bikes from all city fire stations between Feb. 12 and 28.

The licenses are of particular value in speeding return of lost or "borrowed" bicycles. The department presently has some 400 bikes, accumulated over the past year, which must be sold at auction because their owners cannot be located.

Licenses are issued on completion of an application (available at fire stations and from all area schools) and cost \$1 for 10 years. The license package includes a certificate, metal tag and bike safety pamphlet.

These include nine-day visits to Mexico leaving April 10 and May 22 (Acapulco, Mexico City and Guadalajara for \$198); Hawaii trips slated May 15 and June 5 (nine days for \$239, and other more elaborate itineraries available); nine-day visits to the New York World's Fair, June 19 for \$311; and an Alaska cruise departing May 22 for nine days (\$369).

Employees eligible for three-week vacations should also act promptly if they wish to take part in the European Grand Tour (22 days leaving May 24, \$898); or the Oriental Grand Tour (23 days leaving July 30 for \$898).

Other departure dates are available for all excursions except the Orient trip.

More information can be obtained by using prepaid postcard request forms available at employee services offices at Plant 1, Plant 19 and Plant 71. When sent to the IRC travel representative, these will bring full details on any tour by return mail.

Salvage Schedule Set For Month

Salvage yards at Convair and Astro plants will be open on alternate Saturdays on the following schedule:

Astro—Feb. 20, March 6.
Convair—Feb. 27, March 13.

ARA Calendar

(GD/Astronautics Recreation Association has some 40 activities in operation for employees. For information call ARA Headquarters, ext. 1111.)

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ASTRO LENS — Meeting and quarterly contest, 7:30 p.m., Feb. 21, Photo Arts Bldg., Balboa Park.

BOWLING — Plant championship, April 17-18, Clairemont Bowl, with applications available soon from employee services.

BRIDGE — Play nights each Friday, 7:30 p.m., in ARA Clubhouse.

GUN CLUB — Troy shoot Feb. 21; ARA registered trapshoot, Feb. 28; both at CRA Range, Gillespie Field.

GYMNASTICS — New classes for men, women, children now forming. Contact ARA Headquarters, ext. 1111, for details.

JR. RIFLEERS — Business meeting today (Feb. 17), 7:00 p.m., ARA Clubhouse. Shoot, 8 a.m., Feb. 20, CRA Range, Gillespie Field.

TEEN CLUB — Dance featuring Dick and Dee Dee, 7:30 to 11:30 p.m., Feb. 20, ARA Clubhouse.

VOLLEYBALL — Entry forms for IRC 1965 tournament available after March 4 from ARA Headquarters, ext. 1111.

Ranscht, Schindler Win Double-Header

Warren Ranscht and Al Schindler finished first and second in that order in both .22 matches fired in late January by ARA Pistol Club.

In a Police Course match, the two fired identical scores of 296, with Ranscht winning master class honors over Schindler, 12 to 9x.

Angrm Carlson topped expert class in this contest with 269, and Bill Worthington placed second with 263. In the sharpshooter bracket, Lyle Ewing fired 253 to top Byron Clapper's 241.

In the closely-contested Short National event, Ranscht tallied 287, Schindler, 286; Roscoe Anderson, 285; Harry Black, 284.

Ashleys, Emersons Win in Bridge Play

Two husband and wife teams were winners in ARA Bridge Club play when the group gathered for its final session of the month, Jan. 29.

They were Mr. and Mrs. Wells Ashley, north-south, and Mr. and Mrs. Ralph Emerson, east-west.

On Feb. 5, N-S winners were Dennis Suchecki and James Harratty, with Jessie Morris and Katherine Johnson, E-W.

Bridge Club holds regular play nights, Fridays at 7:30 in ARA Clubhouse, and these are open to employees of all General Dynamics divisions in the San Diego area.

Explorers Schedule Meeting, Field Trip

ARA Explorers Club meets today (Feb. 17) at 7:30 p.m. in ARA Clubhouse for a program dealing with equipment required for lightweight camping.

This weekend, Feb. 20-21, the group will travel to McCain Valley Natural Resources Area in the In-Ko-Pah Mountains, where Larry Lesh will lead hikes to Sombrero Peak and Carrizo Palms Canyon.

Because of the chuck-wagon breakfast planned for Sunday morning, prospective participants are asked to register in advance with Joe Quijada, Plant 71 ext. 4068.

VOLLEYBALL ENTRIES AVAILABLE SOON

Announcement of San Diego Industrial Recreation Council's 1965 volleyball tournament is expected on March 4. Team application forms and details on the event will be available from ARA Headquarters, ext. 1111, after that date.

Sports & Recreation



FIRST IN LINE—Joe Rogers, left, head of Boosters for GD/Astro Management Club finds first customer for tickets to "Astro Night at Disneyland" in Ed Puett, Dept. 460-0. Tickets went on sale last week from Boosters and employee services. Price of \$3.75 per person entitles holder to use of all Disneyland facilities when park is reserved exclusively for GD/Astro folk, March 27, 8 p.m. until 1.

Bowling Event Set For April

Commissioner Forest Erwin has announced that the 1965 edition of the ARA-sponsored plant championship bowling tournament will be held April 17 and 18 at Clairemont Bowl.

Applications will be available soon from employee services outlets and at bowling establishments where ARA leagues are presently in action.

The plant championship is the "big" event of the year for ARA bowlers, bringing together the best of the division's keggers who compete on a handicap basis.

Scheduled for this year's meet are team events for men's and mixed teams, men's and women's singles, mixed and men's doubles. All-events competition is also planned.

Last year's tournament attracted more than 400 persons, with 75 teams taking part.

Quarterly Contest Set For Astro Lens

Astro Lens camera club, open to all San Diego area GD employees, will meet for its first quarterly contest of the year at 7:30 p.m., Feb. 21 in Balboa Park's Photo Arts Bldg.

Competition will include categories for both black and white prints and color slides. The program will feature showing of pictures made at a club meeting.

Dick & Dee Dee Set For Teen Club Ball

"Without Your Love" and "Thou Shalt Not Steal"—top hits by top stars—will be featured Saturday (Feb. 20) when Dick and Dee Dee appear at ARA Teen Club's dance, 7:30 to 11:30 p.m. in ARA Clubhouse.

Admission for this special event is \$1 per person, with each member allowed a guest and a guest couple for the evening.

Adult Shooters Yield To Young Marksmen

It was a day for red-faced adults and excuses—"bum ammunition," "old age," etc.—when ARA Senior Rifle Club held its monthly shoot Feb. 7 at the CRA Range, Gillespie Field.

Two teen-agers, Terry and David Farrelly Jr., topped the field.

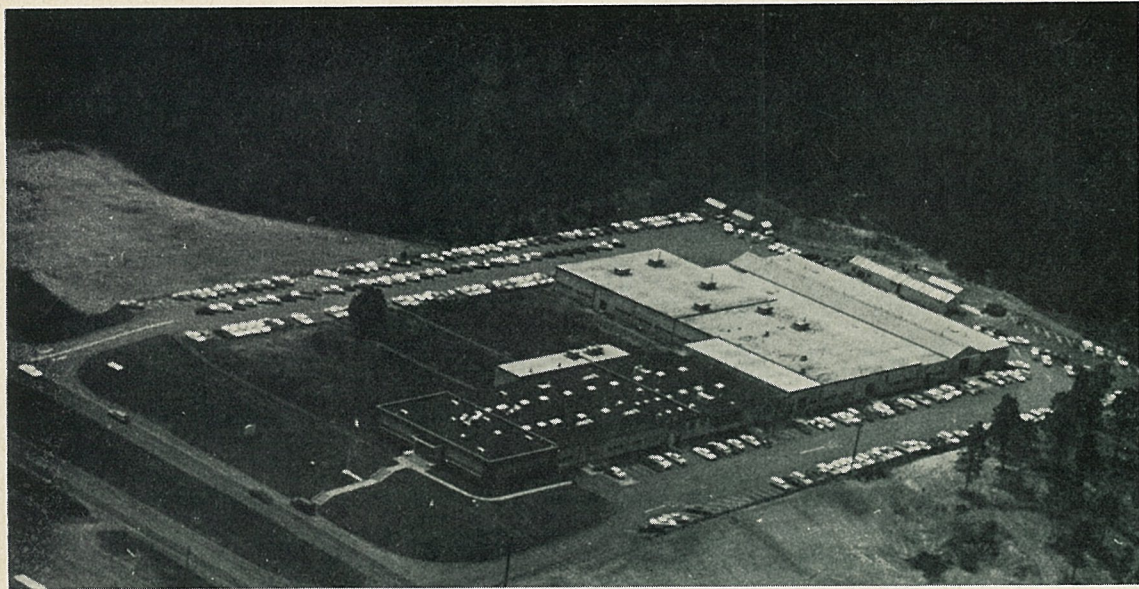
Terry was first with a score of 264, and David close behind with a second-place 361. Third ranked for the day was the only "placing" adult, Club President W. P. Prentiss who fired 358.

For the boys' father, Dave Farrelly Sr., the scores produced mixed emotions. His blush may have been parental pride—or it may have had something to do with a score of 352—12 points behind "No. 1 son."

ARA Commissioner Bob Andrews administered the match.



CHAMPS AGAIN—Airmailers, who recently won plant flag football championship for fourth consecutive year, display trophies. Back row, from left, are Sidney Lakes, player-manager, Carl Root, Charles Lawson, J. C. Clinger, James Hatcher. Kneeling, from left, are P. L. Smith, John Wayman, Charles Johnson, Richard Leslie.



IN VIRGINIA — Aerial view shows plant of U.S. Instruments Corp., now part of Stromberg-Carlson Corp. It is located in outskirts of Charlottesville, Va., scenic city in foothills of Blue Ridge Mts.

Charlottesville Plant Now Part of S-C Corp.

United States Instrument Corp., with which Stromberg-Carlson division of General Dynamics Corporation merged early this year, is a 28-year-old company located in Charlottesville, Virginia.

U.S.I. over the past several years has grown until it now employs more than 500 persons. The biggest increase in sales came in 1963 when volume jumped 60 per cent to more than \$10 million. The figures just released for last year show that the company was able to maintain approximately the same sales volume.

Communications products of U.S.I. will complement and extend the systems and equipment manufactured by Stromberg-Carlson.

U.S.I. was organized in 1937 by a former RCA engineer, Herbert W. Warnke, to manufacture sound-powered products he had invented. The company was founded in Summit, N.J., but in 1954 moved to a new plant in Charlottesville, Va. Products manufactured at the time of the move were primarily sound-powered telephone equipment and telephone ringers.

The relocation to Charlottesville marked the company's entry into an agreement with Siemens & Halske of Munich, Germany, to supply their telephone products to the independent telephone industry in the United States and to manufacture equipment under their patents.

Capital for the expansion program at Charlottesville was provided by Payson & Trask, an investment firm of New York City. The "Payson" of this firm is Mrs. Joan Whitney Payson, owner of the New York Mets baseball team.

Both Siemens & Halske and Payson & Trask are continuing their interest in the new Stromberg-Carlson Corp. and are represented on this corporation's Board of Directors.

Warnke retired from active management of U.S.I. in 1960, a move that resulted in a reorganization and the appointment of William A. Rockwood, then general manager of operations at Stromberg-Carlson division of General Dynamics, as president of U.S.I.

In the four years since his appointment, Rockwood has been responsible for the introduction of many new products which have led to the rapid sales growth. U.S.I.'s private automatic branch exchanges, which in conjunction with Stromberg-Carlson's will provide a broad range of PBX capabilities in the new company, have received wide acceptance in the independent telephone industry and are being used by many offices, hotels and motels.

Another recent innovation by U.S.I. is direct distance dialing equipment, with one of the largest such systems just installed in Las Vegas for the Southern Nevada division of the Central Telephone Co.

Sound-powered telephone systems have been used by many industries and have gone aboard ships as "back-up" for the internal communications systems in case of power failures. This equipment, which relies on the human voice as its only source of power, is used aboard all vessels of the U. S. Navy including America's entire nuclear submarine fleet.

Manufacturing facilities at U.S.I. cover 100,000 sq. ft., with the most recent addition having been opened in 1960. The plant is situated on 25 acres of land on route U.S. 29 N in Charlottesville.

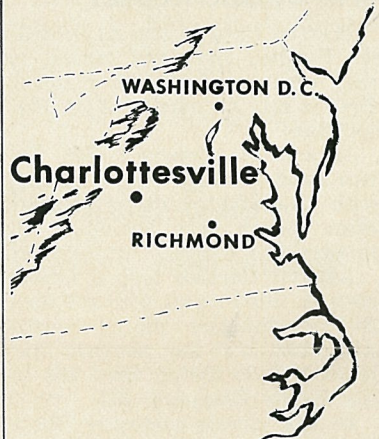
With the formation of the new Stromberg-Carlson Corp., Edward F. Hoy was named director of operations of the Charlottesville plant, reporting to John L. Lombardo, vice president, engineering and manufacturing.

Jefferson Land

CHARLOTTESVILLE IN HEART OF HISTORIC VIRGINIA

Charlottesville, Va., home of the former U.S. Instrument Corp., now a part of Stromberg-Carlson Corp., is located in the foothills of the Blue Ridge Mountains, 117 miles south of Washington, D.C.

This is "Thomas Jefferson Country," rich in American history. Here is Monticello, Jefferson's home, and Ash Lawn, home of James Monroe. It also is home



of the University of Virginia which Jefferson founded (Edgar Allan Poe and Woodrow Wilson were students here).

Population of the city is about 34,000, the center of a rich agricultural and fruit raising area. It is the hub of historic and scenic Virginia. Founded in 1762 (named for Queen Charlotte, wife of England's George III), the city was incorporated in 1888.

Serving as trading center for the area, Charlottesville also has attracted a number of light industries, including a silk mill, an office equipment plant and a mechanical pen and pencil factory. The climate is mild and agreeable, though offering a complete change of seasons. Fox hunting is among the popular sports.

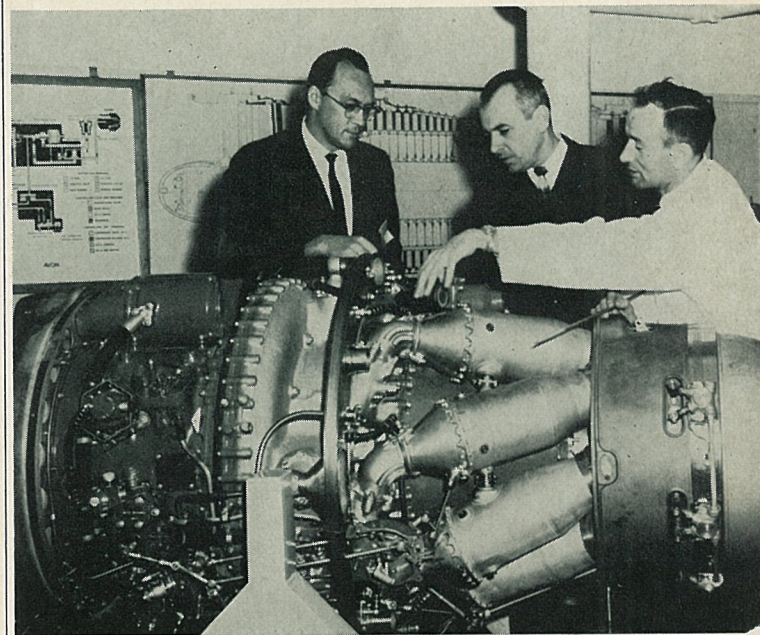
It's 36 Degrees Below (Outside!) As Two Attend Engine School

Two Convair men braved the Canadian winter last month to attend a familiarization and operation course on the Rolls-Royce Dart propjet engine at Rolls-Royce of Canada, Ltd. School of Instruction, in Montreal.

John Knebel, Convair's chief test pilot, and Don Maxion, regional field service representative, were at the Canadian plant the middle of January for the Dart engine course. (They reported 36-degree-below-zero weather and plenty of snow.)

In addition to the Montreal visit, Maxion went on to consult with two other major vendors on the Dart-Convair program—Dowty-Rotol, Ltd.'s Canadian plant near Toronto, and AiResearch Mfg. Co. in Los Angeles, Calif., a division of Garrett Corp.

Dowty-Rotol is furnishing propellers for the Dart-Convairs. AiResearch Mfg. Co. is supplying air conditioning and pressurization components and auxiliary power units.



DART ENGINE "STUDENTS" — Don Maxion (left) and John Knebel (center) of Convair are briefed on Rolls-Royce Dart propjet engine which will power Dart-Convairs during familiarization course at Rolls-Royce of Canada, Ltd. Rolls-Royce instructor is Phil Rogers, at far right.

Astro Folk 'Act' in Film Boosting Zero Defects

GD/Astronautics Craftsmen found themselves "on camera" last month when the division was asked to participate in the production of a film on its Zero Defects-type Do Good Work program for the Department of Defense.

The film, produced by Army Missile Command, Huntsville, Ala., for DOD, is the third in a series of "progress reports" being filmed to note and encourage development of motivational programs within industry.

The portion of the film featuring Astro will be built around remarks by President J. R. Dempsey, filmed and taped last year when he was a key speaker at the DOD Zero Defects Seminar, Dec. 8, at San Diego Naval Training Center.

Three scenes recently shot in Astro production area under guidance of Al Cory, the film director, will supplement Dempsey's comments and other general footage showing Astro's San Diego facilities.

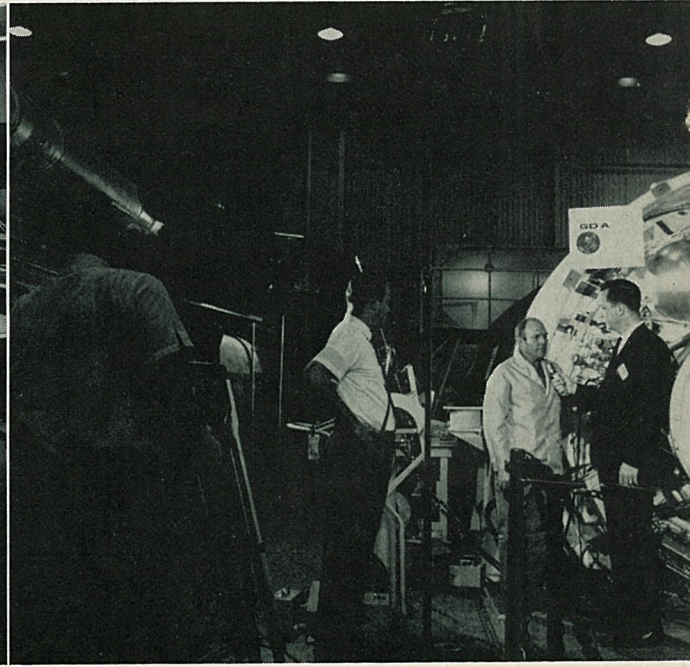
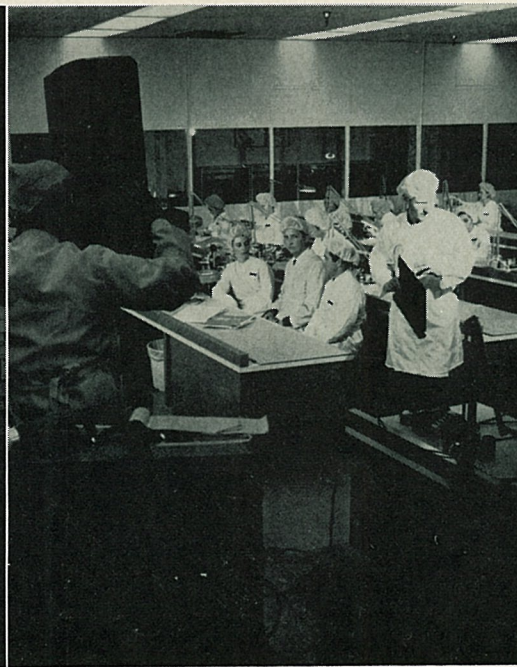
Under Cory's direction, personnel from Astro's motion picture and TV section filmed interviews conducted by Roy Woodlee in Centaur, SLV and electronics production areas.

In SLV, Woodlee spoke with Lee Ely whose group twice won the division's Craftsmen-of-the-Month award in 1964, and with Gordon Briggs, in charge of SLV quality control.

In Centaur final assembly, Jack Oliver explained that in his group, "Do it right the first time" has become a way of life since the Do Good Work program was implemented.

Diane Dows of Dept. 780-1 found herself on camera when the movie crew donned lint-free caps and smocks for shooting in Astro's Bldg. 33 electronics manufacturing area. Also appearing in this segment was George W. Love, Air Force quality assurance representative.

In its final form, the film will run a total of 28 minutes, making it suitable for television use.



ON CAMERA—GD/Astronautics' Do Good Work program caused division's key production areas to fill temporary double role as "sound stages" recently during shooting of film segments for Department of Defense motion picture report on Zero Defects. In Atlas SLV area, photo at left, Cameraman Bill Carter concentrates on Gordon Briggs, Roy Woodlee (acting as interviewer), and Lee Ely, while Pat Callahan

holds scene board. New cast appears in center photo in electronics manufacturing area, with Chuck DeMund on sound equipment (extreme left), Carter on camera, while Woodlee (seated center) interviews Diane Dows and AF quality assurance representative George W. Love. In Centaur area, right photo, Carter stands by while Director Al Cory coaches Jack Oliver and Woodlee in another scene.